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THE HABITATS AND COMPOSITION OF THE VEGETATION
OF OKEFINOKEE SWAMP, GEORGIA

A. H. WRIGHT AND A. A. WRIGHT

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THE HABITATS AND COMPOSITION OF THE VEGETATION OF OKEFINOKEE SWAMP,¹ GEORGIA

By

A. H. WRIGHT AND A. A. WRIGHT

Cornell University

¹ The investigation upon which this article is based was supported by a grant from the Heckscher Foundation for the Advancement of Research, established at Cornell University by August Heckscher.

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THE HABITATS AND COMPOSITION OF THE VEGETATION OF OKEFINOKEE SWAMP, GEORGIA

INTRODUCTION

The plant material which is the basis of this paper is now in the Cornell University Herbarium and consists of the following:

<i>Date</i>	<i>Collector</i>	<i>Number of Sheets</i>
May 28-July 13, 1912	J. C. Bradley	86
Dec. 19-31, 1913	J. C. Bradley and J. G. Needham	143
Apr. 21-Aug. 1, 1921	A. H. Wright	1699
June 11-Aug. 25, 1922	A. H. Wright, A. A. Wright, M. D. Pirnie	
Aug. 25-Sept. 17, 1922	F. Harper	12
		<hr/> 1940

The material of 1921 and 1922 was provisionally identified in the field by the authors and Mr. Pirnie, as far as time and skill permitted. The total collection was finally identified by Prof. K. M. Wiegand and habitat lists and general discussions would be lacking in species detail without this aid. Thanks are also due Mr. S. H. Burnham and Mrs. T. R. Allen of the Department of Botany. This paper was finished in 1926 and the scientific identifications are therefore of the period preceding that date. In December 19-31, 1913, Profs. Needham and Bradley gave considerable attention to the collection of data on the plant formations of that period of the year. In the three summers 1912, 1921, 1922, the senior author made journal notes on the plants and plant associations of the region. These add many species to the lists. In 1921 and 1922 we did not collect such conspicuous plants as slash pine, maiden cane, poison ivy, cabbage palmetto, persimmon, old man's beard, and equally well known species. These are indicated in the lists by numbers after the scientific names.

The common names for plants employed in this paper are largely secured from the Lee family of Billy's Island (especially Jackson, Harrison, and David and from the younger sons of the first two; *e.g.*, Henry Harrison Lee, Marian Lee, Noah Lee). On the outskirts of the swamp we received considerable information from the Griffis family of Mixon's Ferry (especially E. L. Griffis) on the west side and on the east side from the brothers R. A. Chesser and Samuel Chesser and their sons Benjamin, Thomas, Harry and Ridley. Mr. R. A. Chesser, Harrison Lee, Walker Davis and several others gave us the medicinal use of each form and the first named said he was a "Thomsonian doctor." Every one in the employment of the Hebard Cypress Company helped to make our stay in the swamp very profitable. To the Messrs. Hebard, the owners, and J. M. Hopkins and A. J. Armstrong, superintend-

ents, and Sam Edwards, Sam Mizzell, Hampton Mizzell, the Quartermen brothers, and many others, we are deeply grateful for numerous courtesies, transportation, and kindly offices. Most of the photographs were taken for the Cornell Heckscher Expeditions by Dr. F. Harper and the authors. Nine photographs of winter conditions, December 1913, are by Prof. J. Chester Bradley and as many more are contributed by Dr. Miles D. Pirnie.

THE OKEFINOKEE REGION

LOCATION

The region of this study is roughly the Okefinokee swamp, southeastern Georgia, U. S. A. The swamp covers parts of Charlton, Ware, Clinch, Pierce, Camden and Brantley counties and extends into Florida if Bay Swamp be conceived as a part of its area. In a previous discussion we have given its area as 660 square miles, 26 miles in greatest width and 39 miles in greatest depth. Possibly these dimensions are somewhat larger than they are now known to be. The chief effluent of the swamp is the Suwannee River. The St. Mary's also drains some of the eastern part of the swamp. The tributaries or branches on the east side of the swamp are mainly short and most of the larger creeks are tributary to the St. Mary's River, while on the western and northern sides many creeks of considerable length flow into the swamp and through it eventually into the Suwannee. This swamp on the north of east Florida then makes of it an island, if one wishes so to term it.

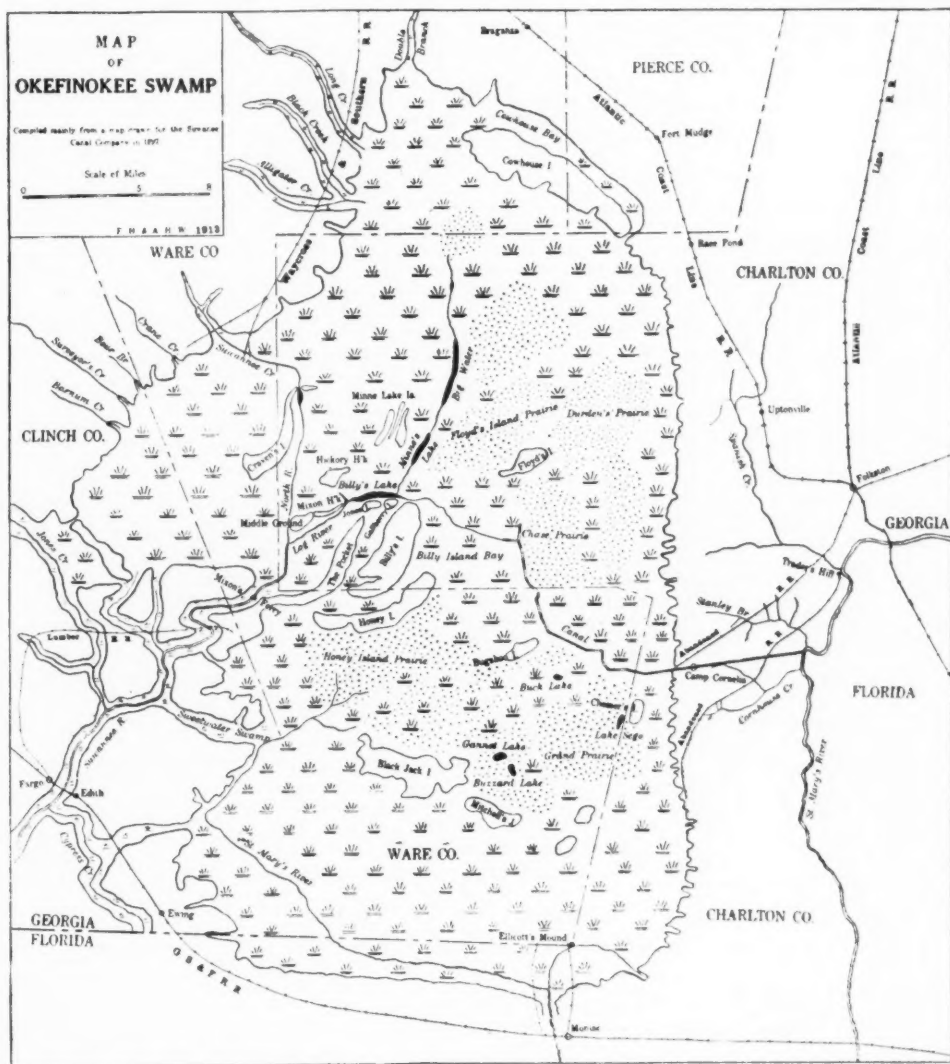
ZONAL AND GEOLOGICAL RELATIONS

The Okefinokee region falls largely in the Sabalian and Lower Austral life zones of Rehn and Hebard (1916), or physiographic areas called Lower Coastal and Upper Coastal by the same authors. It is in the Coastal plain of the southeastern United States and very decidedly of the pine barren region variously placed in Flat Pine Barrens, East Florida Flatwoods section (Florida portion of region). In some interpretations it might fall into the Gulf Strip of the Lower Austral or in some discussions be thought of as a part of the northern portion of the range of some "Floridan forms."

If the classification employed be Coastal, Piedmont and Mountainous, it is largely or almost solely in the Coastal region. If one use Drayton's (1802) "lower, middle and upper countries," it falls solely in the lower country. Or, according to Mills (1826), (alluvial or primitive country) it is solely in the alluvial area.

The Sabalian zone in Florida would seem to be largely the area of Pleistocene and Oligocene time (Apalachicola formation). In Georgia one is perplexed by the Sabalian swerving from Effingham County on Savannah River almost straight west to Clay County on the Chattahoochee River. Nor-

mally one would think of the Sabalian as coincident with the Okefinokee and Satilla formations of the Pleistocene. Possibly this effect is produced by the arms of Alum Bluff formation (of Apalachicola group) of Oligocene ex-



tending up the eastern and southern Georgian rivers. In Georgia, the Sabalian may represent Dr. Roland M. Harper's Miocene, upper Oligocene, and Lime Sink regions (Annals N. Y. Acad. Sci. XVIII, Part I, Sept. 1906, Frontispiece). In North Carolina, it corresponds more or less closely to the Chowan formation or possibly to the Chowan and Wicomico formations of Pleistocene time. In area the Sabalian corresponds closely to the northern limits of both *Sabal palmetto* and *Screnola serrulata* combined (vide Livingston & Shreve 1921, pl. 20), or more roughly with line 140 of the daily normal precipitations for period of average frostless season (L. & S. 1921, pl. 46) or the distri-

bution of *Pinus caribaea* (L. & S. 1921, pl. 6), or line 10 of cumulative distribution of evergreen broad leaved trees or south of moisture temperature index 9 (L. & S., pl. 70) for period of average frostless season while the Lower Austral would be between moisture temperature indices 9-6 (pl. 70). The United States Biological Survey has for many years recognized a Gulf Strip of the Lower Austral. At times they have omitted it from their maps and at times they have reestablished it. They have always drawn the northern limit of this strip more or less along the line 31° N. latitude or roughly along the Georgia-Florida boundary. Many ornithologists have recognized that many so-called "Floridan" sub-species extended along the coast to South Carolina and some even to North Carolina but no map has yet appeared representing this strip as having the outlines which Rehn and Hebard (1916) gave it. The allocation by these authors of the Lower Austral in Georgia seems to be from the Altamaha (Lafayette?) formation of Pliocene (?) time of Arkosic sands of Lower Cretaceous or from Springfield to Augusta on the east or Okefinokee to Columbus on the western half. In Florida it may extend into northwestern Florida as little touches of the Lafayette formation. In North Carolina it embraces the Sunderland and Choharie formation of the Columbia group (Pleistocene time) and the Lafayette formation (Pliocene ?) to the basement rocks of the Precretaceous.

ELEVATION

The only published source for levels about the swamp is the Mahon-Fremont-Gillmore Survey of 1878 and 1879 for an Atlantic Gulf Canal. This survey ran a series of levels around the margins of Okefinokee Swamp proper and Bay Swamp to the south. The lowest point in the margin of Okefinokee Swamp is at its Suwannee outlet at Mixon's Ferry (southwest corner), where the water surface is 107.5 feet above low tide level at St. Mary's, Ga. The levels along the pocket southwest along Suwannee River to mouth of the Suwanoochee River run from 102 to 116.6 feet. From Suwanoochee River eastward to Fort Moniac (southeast corner of swamp) some elevations reach 133.9 feet. Above Fort Moniac where St. Mary's River leaves the swamp the level is 115.7 feet. From Fort Moniac northward, they soon reach 143 feet at Old Fort Tompkins opposite Chesser Island. Toward Cowhouse Island region on the north end they reach to 144 feet. From the north on the west side of the swamp they start with 131 feet and drop to 109 feet near Mixon's Ferry. Black Jack Island is 125 feet; Billy's Island, 114 feet; Billy's Lake, 107.5 feet above sea level.

The U. S. Geol. Survey has issued two sheets (Folkston and Moniac) which portray the east portion of the swamp. The eastern margin of the swamp on the Moniac sheet is 120 feet above the sea level and on the Folkston sheet to the north it is generally 130 feet. From one-half a mile to two miles

east of this eastern margin is Trail Ridge, normally 140-150 feet in elevation. Most of the islands in either sheet have margins of 120 foot elevations.

CLIMATOLOGICAL DATA

Surrounding the swamp there are several United States Weather Bureau stations. On the north side is Waycross, Ga. (130 feet elevation). One, situated on the east side, at the mouth of the St. Mary's River is St. Mary's, Ga. (10 feet elevation), and another, somewhat east of the swamp is Hilliard, Fla. (69 feet elevation). On the south side are MacClenny, Fla. (125 feet elevation), Lake City, Fla. (210 feet elevation) and Jasper, Fla. (152 feet elevation). On the west side is Valdosta, Ga. (220 feet elevation). We have taken our data from the Climatological Data Summaries for northern Florida, Western Georgia, and Central and Eastern Georgia (data to 1920 inclusive). Jacksonville, Fla. and Allapaha, Ga. are just as near to the swamp as Lake City or Jasper.

The frost data for some of the stations are as follows:

GEORGIA	<i>Average last killing spring frost</i>	<i>Average first killing autumn frost</i>	<i>Average non frost season</i>	<i>Latest spring frost</i>	<i>Earliest fall frost</i>
Waycross....	Mar. 14	Nov. 16	247 days	Apr. 26	Oct. 21
Valdosta.....	Mar. 16	Nov. 15	244 days	Apr. 26	Oct. 21

FLORIDA	<i>Last killing spring frost</i>	<i>First killing autumn frost</i>	<i>Length non- frost season</i>
Hilliard.....	Feb. 10-Apr. 26	Oct. 21-Dec. 8	186-287 days
MacClenny.....	Feb. 13-Apr. 26	Oct. 25-Dec. 27	220-302 days
Jasper.....	Feb. 13-Apr. 25	Oct. 21-Dec. 27	244-305 days
Lake City.....	Feb. 13-Apr. 26	Oct. 25-Dec. 29	195-307 days

These stations around the swamp had annual rainfalls from 47.74 to 52.84 inches or an average of 49.72 inches. The other pertinent metereological data for these stations appear in Table I.

TABLE I. *Climatological Data*

	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Temperatures, °F.													
Highest.....	85	90	96	98	101	105	106	104	102	98	91	89	
Lowest.....	14	4	23	30	40	47	58	57	41	29	20	12	
Mean averages.....	54.3	56.4	62.5	67.1	74.7	79.7	81.3	81.0	79.8	69.5	60.3	58.7	68.2
Mean Max. averages.....	66.1	66.4	74.8	83.5	86.7	90.8	91.6	91.4	88.2	80.4	72.7	65.3	79.6
Mean Min. averages.....	42.9	42.8	53.8	54.8	63.9	68.8	61.1	61.3	68.3	59.2	48.1	42.3	56.9
Rainfall averages; inches.....	2.85	3.72	3.49	2.64	3.75	6.07	6.54	7.10	5.08	2.92	1.94	3.56	49.72
Mean relative humidity; %													
Jacksonville 7 A. M.....	86	84	83	79	79	81	83	85	86	84	85	86	83
Jacksonville 7 P. M.....	77	74	71	69	72	77	78	81	82	79	77	77	76
Sunshine:													
Jacksonville.....	55	57	68	73	71	65	63	63	59	56	63	53	62
Wind movement; miles per hour:													
Average hourly													
Jacksonville.....	7.6	8.3	8.6	8.6	8.0	7.7	7.5	7.1	7.4	8.1	7.5	7.4	7.8
Wind direction:													
Waycross (131 ft. N.)....	n.w.	n.w.	s.w.	s.w.	s.	s.	s.	n.e.	n.e.	n.w.	n.w.	n.w.	n.w.
MacClenny (125 Ft. S.E.)	n.w.	s.w.	s.w.	w.	e.	e.	s.w.	e.	e.	n.e.	n.e.	n.w.	e.
Lake City (210 Ft. S.)....	n.e.	s.w.	s.w.	s.w.	s.e.	s.w.	s.w.	s.w.	n.e.	n.e.	n.e.	n.e.	s.w.
Allapaha (293 Ft.N.W.)..	w.	w.	w.	w.	w.	s.	s.	s.	e.	n.e.	w.	w.	w.

The local names might be wholly unintelligible unless one had access to the ecologic synonymies (1737-1860) which we have placed beneath each habitat caption. These in a measure explain terms existent, although some are little used by ecologists or botanists of today. The ecologic synonymies were first undertaken as a pleasing side light. The following excerpts extend from 1737 or 1741 to 1860. A few classifications before 1803 follow.

1741. "It (soil) consists of four sorts generally speaking, which are distinguished and commonly known by the names of pine-barren; oak and hickory, or mixt land; savannah, and swamps." *An Impartial Inquiry . . . Georgia 1741. Ga. Hist. Soc. Colls. 1840, 1: 158.*)
1742. "... the *American* dialect distinguishes land into pine, oak and hickory, swamp, savannah, and marsh. . . . (A State of the Province of Georgia, 1742, Reprint 1836: 10.)
1775. "... this tract contains several kinds of land, which the planters distinguish by calling them pine land, oak land, swamps, and marshes." (*American Husbandry, 1775, 1: 384.*)
1784. "Here the land is divided into first and second low grounds, and high lands or barrens." (*Smyth, 1784, 1: 203.*)
1788. "The higher and more barren parts of this surface are occupied by the immense pine-forests, and called therefore 'dry pine ridges,' or 'pine barrens.' In the lower parts of the forests everywhere are 'evergreen or laurel swamps,' and along the rivers and brooks there are very gen-

erally 'cane-marshes,' among which must be counted the 'savannahs,' very low tracts subject to overflow, where only canes, rush, and sedge come up, but trees and bush very rarely." (Schoepf, Morrison's edition 1911, 2: 153-154.)

A few paragraphs or excerpts from a long resident of South Carolina may also serve to help in an appreciation of these classifications of the past and of some of their terms which persist to the present. Drayton's "A View of South-Carolina," (1802) gives this help better than almost any other work and shows that habitat characterizations began long ago.

"From this general view of Carolina, it appears, that it may be properly divided into *Lower, Middle, and Upper Country*. . . . Hence, the lower country will comprehend all that part of the state, from the sea to the sand hills. The middle country, that part beginning with the sand hills, and ending at the falls of the rivers. And the upper country, that part stretching from the falls of the rivers, to the northwestern mountains" (p. 11).

Drayton frequently uses the expressions Lowland and Highland. He speaks of a highland dwarf willow oak (*Quercus humilis*), upland willow oak (*Q. cinerea*), upland white oak (*Q. obtusiloba*), highland dogwood (*Cornus florida*), etc. He has *Ilex decidua* as of the "lowlands of lower country" or *Calycanthus Floridanus* as of "middle and upper country near lowlands." In this same way highlands may be in each of his three countries, *e.g.*, in his "highlands in lower country" appear such as crab-apple or black-jack oak; in "highlands lower and middle country" in *Spigelia marilandica*. He speaks of salt islands but whether they are synonymous with his sea islands we know not. On his sea islands he mentions prickly pear, Carolina live oak, wild olive, bayberry, Hercules club, cassine shrub, red cedar (his names) or on lands "adjacent to salts" he has red cedar, cassine shrub, prickly pear, *Magnolia grandiflora*, bayberry. He mentions salt beaches, distinguishes "salt water rivers" from "freshwater rivers" much as in the older days "*dulce*" rivers were distinguished from salt water rivers. He speaks of "tide swamps," "rich tide lands," and "sandy ridges in tide swamps." So also he places "river swamps" in contrast to "inland swamps" unconnected with tides or navigation, as also he has his tide water and inland swamp rice planters. His "river swamps" might be "high river swamps," "narrow swamps in middle country," or low river swamps. In "fresh water swamps" he has the cypress (*Cupressus disticha*); "in sour spongy swamps" some varieties of *Andromeda* and *Vaccinium*; "in swampy lands" waterwhite oak (*Q. lyrata*), ash (*Fraxinus*), southern purple fruited nettle tree (*Celtis occidentalis*), red flowering maple (*Acer rubrum*), and myrtle leaved holly (*Ilex myrtifolia*); "in swamps," *Smilax* and *Acer Negundo*; in "ditches and swampy lands," several arums or Wampee (*Arum* sp.); "in low sandy lands" (*Cyrilla racemiflora*); in "swampy land, which is generally dry" (*Corypha pumila*,

palmetto); "in ponds and low grounds," *Styrax laeve?*, in "lands adjacent to lower grounds," *Styrax officinale*; in "low places" loblolly pine; in "boggy grounds in lower country" several species of *Sarracenia*; in "watery places" *Cephalanthus occidentalis*, *Sium nudiflorum*, *Laurus Benzoin*, *Ilex dahoon*, in "moist places or savannahs," Venus fly trap; in "knolls in dry swamp land," *Magnolia grandiflora*; in "wet soils lower country," *Magnolia virginiana*. "None but the best swampy soils produce these trees," i.e., several species of *Nyssa*. The "Loblolly bay tree (*Gordonia lacinthus*) grows in swampy places in the lower country; particularly in those low tracts of land, called bays." Drayton, however, knew the other use of bay when he suggests it for the mouth of Broad River. We will not launch into a discussion of his categories of old fields, dry lands, high sandy land, high pine lands, strong good land, rich mellow shaded soil or lands, sandy barren lands, and several others.

One generation after Drayton, Robert Mills (1826) divides South Carolina into 7 Sections. The First Section has Sea Islands surrounded by salt water. The Second Section has tide up rivers 30 or 40 miles, a third of this distance salt water. Marshes, tide swamps exist; region alluvial. The Third Section from tide swamp to sand hills in middle country. River swamps 2 to 6 miles wide, highlands with swamps and ponds; some inland rice swamps. The Fourth Section, the sand hill region, barren sand ridges, pitch pine and black jacks. The Fifth Section beyond sand hills, includes first falls of rivers; longleaf or pitch pine, and Spanish or red oak. The Sixth Section; from fifth region to mountains. The Seventh Section is the mountainous country. Whether Georgia has the same we will not attempt to postulate at this point. Mills (1826, p. 149) divided the soil of South Carolina into seven qualities: (1) tide swamp; (2) inland swamp; (3) high river swamp (commonly called second low ground); (4) salt marsh; (5) salt high land; (6) oak and hickory high land; and (7) pine barren.

We give a table of local designations which will constantly recur throughout the paper.

Local Terms	Present Day Equivalents
"Barrens"	As usually understood today.
"Bay"	Cypress wooded swamp or wooded swamp.
"Causeways"	} Passages in the trails across "dreens" or wooded swamps.
"Crossings"	
"Dreens"	Wooded swamp or cypress wooded swamp separating marginal islands from the mainland.
"Hammocks"	Three meanings. <ol style="list-style-type: none"> 1. The vegetational term of the present time. 2. A large island in the swamp. 3. A small island in open swamp or "prairies," synonymous with "heads," "houses," etc.

"Heads," "houses"	Islands in open marsh or "prairies."
"camp houses"	
"islets"	
"Prairies"	Shallow open marsh or open waterlily marsh.
"Run"	Watercourse in open or wooded swamp; or minor outlets of shallow ponds on islands or mainland.
"Strand"	Sphagnous bog formations of several sorts.

The following diagram of vegetation types might also help in the understanding of this interesting region with its relict vegetational terms in local usage.

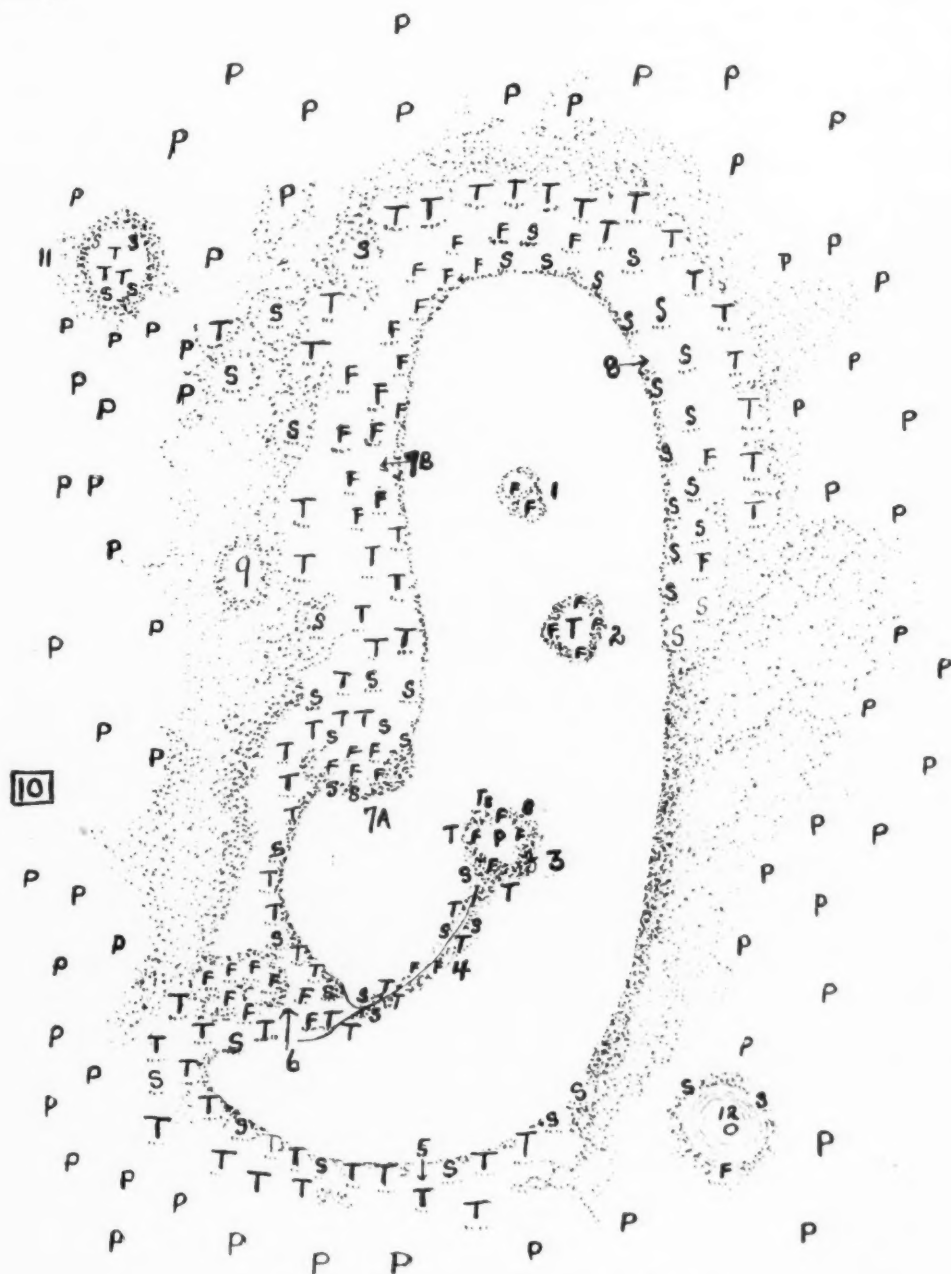


FIG. 2. DIAGRAM OF VEGETATION TYPES

EXPLANATION OF FIG. 2. DIAGRAM OF VEGETATION TYPES

1. Fern (F) Sphagnum (.), Shallow pocket on island.
2. Cypress pond, trees (T) middle encircled by fern (F), Sphagnum (.)
3. Cypress pond open center (prairie-like—P—), encircled by ferns (F.) and Sphagnum (.), which flows into run of trees (T) and shrubs (S).
4. Run connecting cypress pond (3) on island with water zones outside island.
5. Cypress bay, with cypress, bay, and other trees (T) and heath and other shrubs (S) with sphagnum and fern encircling their bases.
6. Fern—sphagnum bog (F S) encircled with cypress bay (T S).
- 7a. Fern bog partially open, partially shrub (S) encircled on island side. Encircled by Cypress bay (T S) on outside.
- 7b. Fern "prairie" or fern "strand" (F), a moat-like area around an island. Ferns predominant.
8. Shrub "strand" (S), sometimes on edge of island.
9. Marginal bog or "Strand," (.) outside cypress bay (T) extending into prairie (P).
10. Shallow marsh or "Prairie" (P) outside strand, open aquatic area.
11. Cypress head with central core of trees (T) surrounded by shrubs (S). Strand (bog) (.) encircles this incipient island.
12. Open lake (O), in "prairie" (P), encircled with "strand" (.), vegetation of orchids, etc., occasional shrub (S) or fern (F) present, as also on "prairie."

The swamp's geographic subdivisions as given by the residents and by the maps fall into four major groups: cypress bays (such as Billy Island Bay, Floyd Island Bay, Double-O-Bay; Jackson Bay); "prairies" (such as Floyd's Island Prairie, Grand Prairie, Chase Prairie, Honey Island Prairie); islands ("piney islands" such as Billy, Honey, Floyd's and Chesser Islands and "hammocks," such as Craven, Mixon, Hickory, Cedar); and watercourses, (a) wooded (such as Minne Lake, Minne Lake Run, Billy Lake, River Narrows, Suwannee River), (b) artificial (such as Suwannee Canal), (c) open channels through the "prairies" connecting lakes or watercourses, which are usually made by the residents and often follow the alligator trails. In March, 1915 (*Acad. Sci., Phila.*, 144, 145). Wright and Bishop used these four divisions in classifying the snakes according to habitat. In 1921 we used thirteen or fourteen groups for characterizing distribution of the animal forms within the swamp, namely pine barrens, island edges, hammocks, grassy fields, cultivated fields, around and in buildings, sand scrub (Floyd's), cypress bays, cypress ponds, cypress heads, "prairies," sphagnum bogs, and watercourses.

In 1922 being located in Chesser Island near the swamp's edge and roaming on the mainland as we did, the list reached 23 or 24 separate habitats or headings on our plant sheets. Categories such as these were used in gathering our notes: St. Mary's River; sand bluff, St. Mary's River; sand scrub; sand ridges or hills; dry pine barrens; Camp Cornelia; cleared and cultivated fields; around buildings; roadsides and railroads; village streets: Spanish Creek moist woods; hammocks; moist pine barrens; edge of islands; cypress ponds; river swamps; branch swamps; bays; strands; edge of wooded lakes; borders of "prairie" lakes.

HABITATS

SHALLOW MARSHES OR PRAIRIES

Ecologic Synonymy (1737-1860).

1769. "fresh water marsh"—(Wm. Stork, 1769: p. 35).
1775. "fresh water marshes" (Am. Husbandry 1775, 1: 388).
1775. "the low grounds on some of the rivers are more properly marshes; they are small, and such as are found in the best and most beautiful counties of England; low meadows on rivers, wherever they are found, were (in in a state of nature) marshes: we have none but what might easily be drained, and would then be the richest meadows in the world, especially kept as watered ones. Even these marshes are with us found full of tall and beautiful cedars and cypresses." (Am. Husbandry 1775, 2: 10-11.)
1791. "marshes"—(Wm. Bartram, 1791: 128-133).
1821. "fields of nymphia," "large floating field . . . of the nymphia nilumbo, . . ."—(Forbes, 1821: 125).
1821. "fresh marshes"—(Elliott, 1821: 57).
- "shallow stagnant . . . water"—(same, 1824: 7, 67).
1823. "*the fresh water marshes . . . ; . . . the soft marshes lie lower . . .*" (Vignoles, 1823: 91).
- 1822-1842. "a deep lily pond (McCall, 1868: 390) (In Big Cypress Swamp) "small wet prairie" (pp. 383, 388); another and larger prairie, alternately dry and wet" [possibly moist pine barrens A. H. W.] (p. 383), coarse wet grassy prairie" (p. 192).
1836. (Map shows "Savannas or Prairies"); "prairie swamps" (Potter, 1836: 4) ". . . Kenapaha (Payne's) prairie . . . (p. 100).
1836. Cohen's "prairie" (pp. 189, 190) may not mean marshes or wet prairie.
1848. (Big Cypress Campaign) "wet prairie most of the way" (Sprague, 1848: 360); "coming upon a wet prairie, cabbage and pine islands on the right" (p. 364); "a large open prairie; the ground is so soft, that you can push a stick four feet down with the greatest ease; water about six inches deep nearly all the way." (p. 365); "prairie" (pp. 206, 355, 367, 369) "The water in the grassy prairies is from an inch to two feet deep. In some places there are openings or channels through the grass which some think might be passages for canoes. I do not believe so, as such passages are very common in high grass, made by the main current of water when it is high (as in the rainy season)" (p. 373).
1879. "The prairies were found covered with a rather uniform depth of water of from 1½ to 2 feet." (Of Okefinokee Swamp). Mahon-Fremont-Gillmore Survey 1878-1879.
1920. "the marshes are wet prairies." (Small, 1920: 92).



FIG. 3. Floyd's Island Prairie. A boat-trail with water-lily (*Castalia*) leaves upturned. Along the side are hard-heads (*Xyris*) and never-wets (*Orontium*). Cypress-heads in the background. June 10, 1921.



FIG. 4. Floyd's Island Prairie. Poleing. June 14, 1921.

SHALLOW MARSHES, CALLED "PRAIRIES."

DISCUSSION

The term "prairie" is not used in the sense employed in the Western United States. In the past in the southeastern states it might mean savannas, dry or wet. Terms such as wet prairies, "prairie swamps," etc. were used during the Seminole War. We employ the term as shallow marshes.

The "prairies" are some of the most appealing spots of the Okefinokee Swamp. Professor J. G. Needham pronounces them the most wonderful waterscapes he has ever seen. They are largely in the northern and eastern half of the swamp, extending from Cowhouse Prairie on the north to Grand Prairie or Bee Gum Prairie on the south. There is considerable of "prairie" on either side of the boat trail from Cowhouse to Minne Lake. Some of the most beautiful "prairies" are in the eastern and southern portions:—Chase Prairie just north of the Suwannee Canal and between Jackson and Double-O Bays; and Grand Prairie between Chesser and Mitchell islands. These two are largest and may be at least five or six miles in greatest diameter.

In some of the earlier maps (Singleton, 1875) authors content themselves with indicating the "prairie" areas. Soon (1879, Ship Canal) maps begin to designate "open prairies." Probably the "open prairies" of Okefinokee Swamp proper led it to be distinguished from its near southern Florida neighbor, the "impenetrable Bay Swamp." C. W. Parker of Waycross (1918) indicates some fine "open prairie" areas in contrast with six or seven "thick swamp" tracts. In the Suwannee Canal map of September 1897 three are named—Durdin, Chase and Grand Prairies. At present at least twenty or more of them are named. Several receive their names from a close-lying island (such as Cowhouse Island, Floyd's Island, Honey Island) or from size (Grand) or from residents connected with residences nearby the "prairies" (Carter's, Durdin, Christie, Mizzell) or from other people temporarily in the swamp (Chase), or for other reasons (Territory, Bee Gum, etc.).

Except for the watercourses the deepest water areas are the "prairies." They vary from 1-2 or 3 feet in depth. At times it is hard work poleing a boat over these expanses. Rarely they may become dry and at least two or three old residents assure me they have seen the "prairies" baked and cracked like clay. Travel is usually by boat and with a pole 5-8 feet long and the course usually follows the "runs," "alligator trails," "alligator roads." In places these trails widen and there is a circular or oval clear water area 3-8 feet deep, seldom over a man's head. These "alligator holes" where the black basses ("trout") and larger fish gather, are without vegetation. Deer, bear, otter and other animals wade over these expanses and a man can travel afoot in it but finds it hard work. The bottom consists of a deep layer of peaty soil. The term "open" goes with "prairie."



FIG. 5. Grand Prairie. Alligator's nest. Observe clear area around the nest and the two button-ball bushes (*Cephalanthus*) one behind Mr. Pirnie, and one to the right of the nest, . . . incipient cypress-head formers. July 7, 1922. Photo by M. D. Pirnie.



FIG. 6. Gap-O-Grand Prairie. Entering Grand Prairie from the north. July 7, 1922.

SHALLOW MARSHES CALLED "PRAIRIES."

A few journal notes may give some idea of the prairies. Our first introduction to a prairie was on Honey Island Prairie, May 30, 1912.

Open water never more than 4 or 5 feet deep with lily pads or "bonnets" (*Castalia odorata*), a smaller water lily-like plant (*Nymphoides aquaticum*), purple bladder-worts, (*Utricularia purpurea*), a yellow bladderwort (*Utricularia fibrosa*) and sundew (*Drosera longifolia*). Saw 16 young wood ducks. Near camp an osprey's nest 50 feet up on a head; another, 100-150 feet up. On "prairies," "gator holes," some a foot or yard wide; others, 25-75 yards wide. In water numerous frogs and killifishes. In afternoon the boys shot a bear. Went after him at night.

The same year 1912 on Floyd's Island Prairie we noted:

June 25, 1912. The prairies are with white and yellow "bonnets" (*C. odorata*, *N. macrophylla*) a yellow flower called "hardhead" (*Xyris*). Amongst "bonnets" are occasional small patches of "never wet" (*Orontium aquaticum*) and "wampee" (*Peltandra virginica*). In the middle of the "bonnet" zone, vegetation is scant but as one approaches the next zone, *Utricularia purpurea* enters. Between the bonnet society and the islands (or hammocks, or islets) is a zone of "maiden cane" (*Panicum hemitomum*). Quite frequently isolated button bushes appear in the "maiden cane."

On Floyd's Island Prairie, June 10-15, 1921, around edges of "gator holes" or where sphagnum-strand edge enters "prairie," one finds some *Woodwardia virginica*, *Dulichium arundinaceum*, *Pontederia cordata*, *Orontium aquaticum*, *Calopogon pulchellus*, *Spiranthes praecox*, *Habenaria repens*, *Hypericum virginianum*, *Bidens coronata*, *Sarracenia*, *Erianthus saccharoides* ("cat tail"), and some sedges.

On Grand Prairie, July 7, 1922, we found the "prairies" open with *Castalia odorata*, *Nymphaea*, *Orontium aquaticum*, *Brasenia schreberi*, *Xyris* in small abundance, *Utricularia purpurea* never so common as here, *Nymphoides* blossoming and a yellow *Utricularia* (*U. fibrosa*). This is the true "prairie" zone. Where this zone approaches "Maiden Cane" (*Panicum hemitomum*), sometimes there is plenty of *Nymphoides aquaticum* and purple bladderwort.

The second zone before a "house" is reached is maiden cane with "fern" (*Woodwardia virginica*) appearing in it. Next to the "house" is "duck grass" (*Rhynchospora corniculata*). Sometimes *Xyris* is in shallower water than duck grass. Then, comes the "house" with its bushes, lianes, and trees.

Typically no trees, shrubs, vines, or woody plants of any sort exist on the "prairies." The small amount of sphagnum and woody plants on a true "prairie" is largely an incursion from the marginal sphagnous borders and the cypress bays. The following list, therefore, has some species of these two habitats (marginal bogs and cypress bays). In each habitat list the number of herbarium sheets taken precedes the scientific name and the number of journal records follows the name.

TREES: none, except on an incipient "head" or islet.

SHRUBS: usually none, except on an incipient head or islet, and the following

2 *Cephalanthus occidentalis* L. 8

1 *Decodon verticillatus* (L.) Ell. 3

"Button bush"

"Water pin down," "Swamp
Bend down"

WOODY VINES: none, except on an incipient "head" or islet.

FERNS, MOSSES, ETC.

- | | | |
|--|---|--------------------|
| 3 <i>Woodwardia virginica</i> (L.) Sm. | 3 | "Swamp Fern" |
| 1 <i>Osmunda cinnamomea</i> L. | 1 | Cinnamon Fern |
| 1 <i>Lycopodium Carolinianum</i> L. | 1 | Carolina Club Moss |
| <i>Sphagnum</i> | | "Moss" |

GRASSES, SEDGES, RUSHES:

- | | | |
|---|---|---------------------------|
| 1 <i>Andropogon glomeratus</i> (Walt.) B. S. P. | 1 | "Broom sedge" |
| <i>Arundinaria tecta</i> (Walt.) Muhl. | 1 | "Reed" "Cane" "Reed Cane" |
| <i>Erianthus saccharoides</i> Michx. | 2 | "Cat tail" |
| <i>Panicum hemitomum</i> Schultes. | 2 | "Maiden Cane" |
| 1 <i>Sacciolepis striata</i> (L.) Nash. | | |
| <i>Cladium jamaicense</i> Crantz | | "Saw grass" |
| <i>Dulichium arundinaceum</i> (L.) Britt. | 4 | |
| 1 <i>Eleocharis Torreyana</i> Boeckl. | | |
| 1 <i>Eriophorum virginicum</i> L. | | |
| 1 <i>Fuirena scirpoidea</i> Michx. | | |
| 3 <i>Rynchospora alba</i> (L.) Vahl. | 1 | |
| 3 <i>Rynchospora corniculata</i> (Lam.) Gray | | "Duck grass" |
| <i>Scleria trichopoda</i> C. Wright | 2 | |

HERBS:

- | | | |
|--|----|-------------------------|
| 4 <i>Sagittaria graminea</i> Michx. | 1 | "Water plantain" |
| 2 <i>Sagittaria lancifolia</i> L. | 6 | "Water plantain" |
| 1 <i>Orontium aquaticum</i> L. | 6 | "Never wet" "Flag" |
| 3 <i>Peltandra virginica</i> (L.) Kunth. | 4 | "Wampee," Arrow Arum |
| <i>Eriocaulon compressum</i> Lam. | 2 | "Lowland button grass" |
| 1 <i>Syngonanthus flavidulus</i> (Michx.) Ruhl. | | "Highland button grass" |
| 1 <i>Xyris smalliana</i> Nash | 3 | "Hardhead" |
| 1 <i>Heteranthera reniformis</i> R. & P. | | Mud plantain |
| 1 <i>Pontederia cordata</i> L. | 4 | "Fireweed" Wampee |
| 1 <i>Lachnanthes tinctoria</i> (Walt.) Ell. | | Red Root |
| 1 <i>Iris caroliniana</i> Watson | 2 | "Flag" |
| 3 <i>Calopogon pulchellus</i> (Sw.) R. Br. | 2 | Grass Pink |
| 1 <i>Habenaria repens</i> Nutt. | | Creeping Orchis |
| 3 <i>Spiranthes praecox</i> (Walt.) Wats. & Coult. | 2 | Early Ladies Tresses |
| 3 <i>Polygonum hydropiperoides</i> Michx. | | Opelousas Persicaria |
| 1 <i>Brasenia schreberi</i> Gmel. | 1 | "Coltsfoot" |
| 4 <i>Castalia odorata</i> (Ait) Woodville & Wood | 10 | "Bonnet" |
| <i>Nymphaea advena</i> Ait. | 1 | "Bonnet" |
| 1 <i>Nymphaea macrophylla</i> Small | 2 | "Bonnet" |
| 2 <i>Sarracenia psittacina</i> Michx. | | "Trumpets" "Flycatcher" |
| <i>Sarracenia minor</i> Walt | 1 | "Trumpets" "Flycatcher" |
| 4 <i>Drosera longifolia</i> L. | 3 | "Firegrass" "Fargrass" |
| | | "Sundew" |
| 1 <i>Hypericum virginicum</i> L. | 1 | "Marsh St. Johnswort" |
| 2 <i>Hydrocotyle umbellata</i> L. | 2 | Water Pennywort |
| 4 <i>Nymphoides aquaticum</i> (Walt.) Fern. | 6 | Larger floating Heart |
| 1 <i>Nymphoides lacunosum</i> (Vent.) Fern. | ? | Floating Heart |
| 1 <i>Agalinis linifolia</i> (Nutt.) Britt. | 1 | Flax-leaf Gerardia |
| 1 <i>Utricularia fibrosa</i> Walt. | 3 | Fibrous Bladderwort |
| <i>Utricularia juncea</i> Vahl. | 1 | Rush Bladderwort |



FIG. 7. Grand Prairie. The Inlet of Buzzard Roost Lake. July 7, 1922. Photo by M. D. Pirnie.

FIG. 8. Floyd's Island Prairie. Henry Harrison Lee "sticking his bill in a 'gator hole'." June 14, 1921.

FIG. 9. Floyd's Island Prairie. Henry Harrison Lee "jabbing a 'gator'." June 14, 1921.

OPEN LAKES

<i>Utricularia purpurea</i> Walt. 5	"Pink Water Moss"
1 <i>Diodia teres</i> Walt.	Rough Buttonweed, Purple-flowered Buttonweed
<i>Bidens coronata</i> (L.) Fisch.	Southern tickseed, Sunflower
<i>Bidens coronata</i> L. var <i>leptophylla</i> (Nutt.) Mohr.	Pine barrens Coreopsis

In June (6-15) 1921 the lumber company received many cartons of water plants for ducks from Currituck, N. C. to plant on Floyd's Island Prairie. For many days men labored in herculean fashion trying to clean an area of water lilies, and their roots. Progress was slow and only a small plot cleared. We are very doubtful if any of these will establish themselves under such stiff competition.

OPEN LAKES

Ecologic Synonymy (1737-1860).

"This vast accumulation of waters, in the wet season, appears as a lake, . . ." (Bartram, 1791: 25); "the river St. Mary has its source from a vast lake, or marsh, called Ouaquaphenogaw, . . ." (P. 24). "The lakes (of Okefinokee) abound in fish and alligators" (Hawkins, 1799: 22).

DISCUSSION

In the two U. S. topographic quadrangles (Moniac and Folkston) of the eastern portion of the swamp, some 144 or more lakes are indicated in the prairies. Some, such as Duck, Gannet, Buzzard's Roost, Buck, Cooter (turtle), Little Cooter, and Perch Lakes, are named from animals; others are after people, Durdin, Christie, Walter, Mandy, Dan Durkins, Seagrove, Burnett, and Coward Lakes; some are from vegetation, such as Elder, House, Big Cypress, and Beegum Lakes. There are "Double Lakes" in Carter's Prairie, in Christie Prairie, and Grand Prairie or two Trout Lakes or two Big Lakes, and other duplications. Chase Prairie has an interesting assortment: Fishing Pole Lake, Gatepost Lake, and Sometime Hole. These are all of the "open prairie." Many of the trails of the "prairies" lead from one to another of these ponds. Some were doubtless of originally open water; others may be of alligator manufacture, or perpetuation.

We list 27 species of herbaceous plants and 13 woody forms around their borders. The herbaceous forms are strictly prairie and strand species and the woody forms are from the bay and strand.

One sometimes wonders if the swamp was more lake-like in earlier historical times or as much of an impenetrable bay as at present. We believe Rio de May to be the St. Mary's River. At its source in many old maps is an unnamed lake and many maps have it named in diverse ways: "Lacus aquae dulce a deo magnus est hic locus ut ex una ripa conspice altera non possit," (de Moynes) Sanson's Lac Grande (1657), Lacus Magnus (1682), Laguna

dulce (1539-1543), Apalache Lac (Visscher 16—), Lac Grande (1707), L. May, Duval (1679), Ashley Lake Morden (1687). In 1700-1800 these names pass into "Great Swamp." After the beginning of the nineteenth century the "Great Swamp" was usually eliminated. Wm. Bartram used "vast lake" (Lacus) or "drowned swamp" (Marais) as synonymous in speaking of the Okefinokee Swamp. William Darby (1821) spoke of the Okefinokee thus: "This drowned tract is nearly circular, . . . The first idea that is awakened by a survey of this tract, is, that where it now spreads, once existed a lake. . . ."

In 1784 Smyth in discussing the Great Dismal Swamp speaks of some of the immense conflagrations in dry summers on some of the swamp's ridges. "These places are soon afterwards filled with water, and become small lakes." (2: 237). Of one fire he says, "The effects of this horrible conflagration formed a lake, a mile and one half in breadth, and above three miles long, from four to eight, ten, or even twelve feet deep. It is imagined that the great lake in the center was formed by some former dreadful conflagration far beyond human memory; as burnt wood is frequently found in the bottom of it, even near the middle, and in the deepest places throughout" (p. 238). This is included for historical reasons and is not urged as an explanation of Okefinokee lakes.

WOODED SWAMP OR CYPRESS BAY

Ecologic Synonymy (1737-1860).

1737. "There are likewise *Perkosons*, . . ." (Brickell 1737, Reprint 1910: 12).

" . . . *Perkosons*, where large *Cypress* Trees grow, . . ." (Brickell 1737, Reprint 1910: 13).

1741. "Swamps are of two sorts.—The *Cypress*. They are so called from that sort of tree growing in them; there, is excellent land when cleared, but, being the lowest, it is difficult to drain and cultivate, and must be a work of time and labor.

The *Cane*. These when cleared (which is done with ease) and cultivated, have a land which is extremely rich, being a black and greasy mould; and many things grow on it beyond imagination. Rice particularly thrives the best in these swamps." (An Impartial Inquiry into the State and Utility of the Province of Georgia. 1741. Colls. Ga. Hist. Soc. 1840, 1: 159, 188.)

1761. "The best land for Rice is a wet, deep miry Soil: such as is generally to be found in *Cypress Swamps*: . . ." (Description S. C. 1761. Reprint, 1836: 201.)

1769. "The bay-swamps are frequently found in the pine-lands, being the general heads of the *cypress-branches*." (John Bartram in Stork, 1769: 34.)

1770. "A swamp is any low, watery place, that is covered with trees or canes; there are three kinds of them, cypress, river and cane swamps: they are called the golden mines of *Carolina*; . . ." (G. Milligen, 1770; reprint 1836: 468.)
1775. "Swamps are of several sorts, and they judge of them by their produce; (white oak swamps). Others bear canes, and are therefore called cane swamps: these are generally rich and good; but the most general are the cyprus (388) ones, which is the spontaneous growth of all, where the soil surrounding them is a poor land. However, it is to be noted, that all these swamps, when drained, produce the grand staple of the country, rice, yielding crops of it, as in other cases of a goodness proportioned to their fertility." (Am. Husbandry 1775, 1: 387, 388). "Vast swamps" (p. 332). "The destructive swamps in which rice is cultivated must never be expected to breed people; . . . (p. 358) "good swamp" (p. 407).
1779. "The cypresses and canes choose a still deeper and more miry soil, which is exceedingly fruitful, having had the fruits and foliage of trees from the higher grounds flowing into it from the creation." (Hewatt, 1779; reprint 1836, p. 76.)
1784. "glades" (Smyth, 1784, 1: 151); "in the swamps abundance of cypress, besides cedar, and most other kinds of timber." (2: 38); "swamp" (2: 74) Great Dismal Swamp description (2: 100-103) with "dreadful and horrid preheminece," "astonishing and horrible place," "in-accessible" and "impassible" emphasis.
1788. "In the swamps, . . . there flourish everywhere an exceeding great quantity of canes or reeds" (Schoepf, 1788, 2: 107); "fat swamp-land (2: 122); "*Cupressus disticha* (Bald Cypress) is plentiful in these swamps" (2: 122, 123); "in the lower parts of the forests everywhere are 'evergreen or laurel swamps,' . . ." (2: 154).
1791. "These swamps . . . and in very wet places, *Cypressus disticha*" (Bartram, 1791: 29); "inextricable swamps" (p. 25); "Cypress swamps" (p. 116); "swamps of cypress" (p. 90); "deep cypress swamps" (p. 137; also in a measure A. H. W.); "troublesome cane swamps" (Bartram, 1791: 19); "cane break," "cane meadows" (p. 233).
1799. "Cypress swamp" (Hawkins, 1799: 35).
1802. "They are called *bays*, from the quantities of *bay trees* which grow therein. And which are so tall and closely connected with each other, as to throw a continual shade over the lands below. Hence their soil is naturally sour and spungy: producing china briars, andromedas, and ferns: soon exhausted with culture, and of course but little attended to." (Drayton, 1872: 7) "sour and spungy swamps" (p. 68).
1816. "swamp" (Baldwin, 1816: 333).

1821. "swamp" (Elliott, 1821: 187); "galls" (p. 492); "deep swamp" (Elliott, 1824: 686).
1823. "*Cypress swamps* are mostly near the heads of rivers, and in a continued state of inundation; little or no underbrush, but only crowds of the cypress shoots or *knees*, which point up like small pyramids. In the river St. John many of the swamps and islands are of this kind, . . .; they are likewise bordering on the great southern morasses in every direction." (Vignoles, 1823: 90.)
- "While we are on the subject of wooded low lands it may be observed, that in the pine lands, the early courses of the creeks and streams are through two sorts of channels, *bay galls* and *cypress galls*. The *bay galls* are spongy, boggy, and treacherous to the foot, with a coat of matted vegetable fibers: the loblolly bays spread their roots, and the saw palmetto crawls on the ground, making them altogether unpleasant and even dangerous to cross: the water in these bay galls is strongly impregnated with pyroligneous acid. The *cypress galls* have firm sandy bottoms, and are only troublesome from the multitude of the sprouting knees. Clay is often found in both these kinds of galls, which are sometimes very narrow and sometimes dilate into large morasses." (Vignoles, 1823: 91.)
1827. "swamps, . . . bay galls, . . ." (McBride, 1827: 51).
1841. "bays" (Crawford and Couper, 1841: 4); "cypress glades" (p. 3); "extensive cypress swamp" (p. 3); "cypress flat" (p. 3); "deep cypress swamp" (p. 5); "Gum swamp" (p. 6).
- 1822-1842. "swamp" (McCall, 1868: 31, 35); "cypress swamp" (p. 192).
- "The cypress timber today was magnificent—it was the largest I have ever seen, towering to a height I am afraid to estimate" (p. 193); ". . . half immersed in the drear and gloomy cypress swamp. In the latter, forsooth, he may find enough to excite his wonder, if not his admiration. Here he cannot but gaze in wonder at the enormous shafts of the cypress-trees, which support their broad, flat umbrella-shaped tops at the distance of a hundred and twenty or more feet above the earth. Nor will he indeed be less bewildered as he contemplates the smooth reddish '*knees*' or excrescences that apparently spring from the roots of the trees and surround him on all sides to the height of four or five feet, without leaf or sign of life" (p. 194) (description of Big Cypress Swamp, Fla., pp. 380-394). "Our trail turned into the Big Cypress, and we stepped from water ankle-deep to water knee deep, and which after some time reached our waistbands. In a dark cypress like this, where the direct and cheering ray of the sun never finds its way, the water is proportionately colder, and for five mortal hours, by watch, did we toil through this water, never less than knee deep, without finding a resting place. . . . You cannot form



FIG. 10. Minne Lake Run. The cypress wall or border from a water course.
June 10, 1921.

FIG. 11. Minne Lake Bay. Amidst the festooned cypress; west of Minne Lake.
June 14, 1921.

WOODED SWAMP ("CYPRESS BAY")



12



13



14



15

FIG. 12. Craven's Island. Black gum swamp. Mainly black gum and a few red maples. June 28, 1921.

FIG. 13. Low andromeda (*Andromeda phillyreifolia*). Climbing underneath the bark of a cypress. Dec. 21, 1913. Photo by J. Chester Bradley.

FIG. 14. Crossing through "the bay." Dec. 1913. Photo by J. Chester Bradley.

FIG. 15. Fern bog, Billy's Island. Note cypress knee. Dec. 1913. Photo by J. Chester Bradley.

WOODED SWAMP ("CYPRESS BAY")

the most remote idea of the region we passed through, and which the Indians doubtless thought would prove an impassable barrier. The bottom was boggy, and the water was filled with old logs, snags, cypress-knees, and vines innumerable . . ." (p.387).

1836. "extensive swamps" (p. 73); "immense swamp" (p. 97); "swamps" (map). (Potter, 1836).
1836. "swamp" (Cohen, 1836: 84, 159). "They were often in water to their waists, more than half the way being through swamps. . . . After toiling for hours to cut away the dense growth of trees, the very stumps left beneath the surface of the water, . . . were so numerous that it became impossible to guide the horses through the tortuous clearing" (p. 154). "The foot pushed through with great alacrity, although almost held back by innumerable clasping vines; their clothes hooked, and hands torn by briars—their steps impeded by dense wood-lands, and sinking deep into mud and water" (p. 214).
1848. "swamp," "cypress swamp," "cypress," "cypress thicket." (Sprague, 1848: 355-375.)
1860. "swamps," "deep swamps," "deep miry soil." (Darby, John, 1860. Botany of the Southern States.)

DISCUSSION

The "thick swamp" of Parker's (1918) map, "cypress bay" and "cypress swamp" of most other writers and the residents and "Bay Swamp" are probably synonymous. So also in early days, writers (Savery's map, 1769; B. Hawkins, 1798, 1799) speak of "swamps" meaning wholly or in part wooded swamps. The use we make of the term "cypress bay" when applied within the swamp is probably the equivalent of John Bartram's "cypress and bay swamps." Nevertheless, we may be mistaken. Many times "bays," "bay swamps," "bay galls," "bay lands" are mentioned with ponds, leading one to believe them connected with ponds.

A glance at the Moniac and Folkston sheets show a large part of the eastern half of the swamp as green wooded swamps in contrast with the white open "prairies." A few of these are designated: the fringe on the outer eastern margin of the swamp, the Outside Bay; Double-O-Bay, north of Suwannee Canal; Jackson Bay, south and east of Floyd's Island; and Billy Island Bay, east of this island; Cowhouse Bay, north of Cowhouse Island. All these local names are without "cypress." The two are locally used interchangeably, though more often shortened to "bay" for convenience. In many ways it is the predominant swamp formation. At least half or more of the eastern portion of the swamp is of this type. The western half of the swamp is largely "bays." The two largest are probably the bay west of Minne Lake and north of Billy Lake and another east of Billy Island, the Billy Island

Bay. These two have been the main nuclei of lumbering operations for the last 8 to 10 years.

Some of the earlier trails in the swamp (not boat routes) as given by Jno. M. Hopkins in a map of the Indian Mounds of the swamp (map made for Mrs. J. L. Walker of Waycross, Ga.) were: (1) from the Pocket to Honey Island, (2) from Pocket across a "dreen" to Jones Island thence across another "dreen" or causeway to Billy Island, (3) Trail from Billy's Island to Floyd's Island and thence northeastward to the outside, (4) from Billy's Island to Minne Lake Islands thence to Craven Island, (5) Billy Island to Honey Island. All these except the last one are primarily through a typical bay forest, tangled and almost impassable. Most of these courses are over old Indian trails which are now little used. Wherever the bay goes between two islands or between an island and the outside mainland, *e.g.*, Chesser Island and mainland or Jones Island and the Pocket, it is called a "dreen" and the trail is called a "Causeway" or "Crossing" in the "dreen." A "dreen," therefore, is usually a narrow strip of bay formation. The trails were difficult in old days and are too difficult for the present. In 1912 we came over Gen. Floyd's Corduroy road (70 years or more old), the present trail from the Pocket to Billy's Island. We waded to the waist to get through and had to cut down trees to get our cart to Billy's Island. In 1912 we tried three trails from different points before we could reach Minne Lake Islands through the dense cypress bay tangle. The surveyors for the cypress lumber company always find their most useful tool a Cuban machete to cut the lianes of cat briers or "bamboos" (*Smilax*) which thwart their progress.

Just as one derivation of the swamp's name pertained to the bogs or strands, so two others are allusions to the dense "terrible," "impassable" character of the wooded swamp, the bays. DeBrahm (1751-1771) says "Oekanphanako signifies impassable." So DeSoto and De Narváez found it and they felt it both an "impassable" and "terrible" battle ground. This swamp has been called "Onoquaphanoga ou le Terrible Marcage" (Sartine, 1780), "Onoquaphenoga or the terrible Swamp" (Speer, 1774) *i.e.*, its bays hard to penetrate, or battle difficult in such tangles, or travel hard over "terrible bogs" (see Savery's map, 1769, Crown Collection).

Cypress (*Taxodium ascendens*) is the main tree in these bays. Occasionally quite large stands of "slash pines" or "pine saplings" (*Pinus caribaea* or *P. Elliottii*) may replace it or be interspersed with it. Between the islands, the narrow "dreen" may be largely trees such as gums (*Nyssa s. biflora*), or gums and maples, or, on the edges of some of the islands where the water is not so deep, stands of *Nyssa* make up the so-called "Black Gum Swamps." Sometimes these are quite open with little beneath them. At other times dense cover obtains.

In places where extensive breaks occur in the cypress bay, saw grasses or

some cane enter making tracts akin to cane swamps or breaks of Bartram (1791) and Schoepf (1788; 1911, 2: 107). In Carolina they were called "cane meadows," probably because free of trees. In the same way the marginal bogs or "strands" sometimes have cane-break areas on which occur some of the plant and animals of such places (*e.g.*, cane-break rattler).

On one page John Bartram (1769) speaks of seeing in one region narrow cypress swamps, loblolly bays and some few oak hammocks. Doubtless this cypress swamp would be comparable to cypress bay, his "loblolly bays" to "bay galls," and the "oak hammocks" what we have called "hammocks." One day, one of the residents remarked to me in Floyd's Island Hammock about an "old field now a fine loblolly Bay." We passed the remark and never inquired the meaning of "loblolly bay." We are not prepared to define the habitat or this term of the past, and wonder if it has any relation to either of the "loblolly bays" (*Magnolia foetida* and *Gordonia Lasianthus*) of the swamp. A few first-hand journal notes on cypress bays follow:

June 13, 1912. Minne Island Bay. Left boat west of Minne Lake and started directly northeast at 12:15 P.M. Cut a trail through the thickest of tangled vines and briars. Found a bear sign on a cypress. Found a little slash pine. Tender growth of "gallberry" (*Ilex glabra*), "hurrah bushes" (*Leucothoe racemosa* and *Lyonia nitida*) and bay (*Magnolia virginiana*). After a period, the pack became unwieldy and Bishop began the brush work (machete). Cahn came next with compass. After a mile or so we hewed to due west. At 3 P.M. it looked rainy and Bryant climbed a bay and announced himself "befuddled." In other words we were lost. We cut boughs and camped on the swamp itself at the base of an immense dead pine. While we were cooking, a pair of pileated woodpeckers stopped nearby. Next we heard the cypress-bay warbler, the Swainson's warbler on our back trail. We were eating at 5:48 P.M. in the worst tangle I ever was in. Can not conceive of a wilder place in the U. S. A. than this spot where we are encamped. Yellowflies (horseflies) by day and mosquitoes by night. If we get out of this spot we can stand anything. During the rain we started to smoke out the yellowflies in the tent. Believed it affected us worse. Tried to stick head into boughs. Finally we went out in rain and took it. Such a supper! Cornmeal bread, yellow amber swamp water to drink, to use for bouillon and coffee. We slept four crosswise in tent on a poncho put over a pile of boughs. These in turn placed on top of the swamp. It is a rough bed. This morning at five heard Swainson's warblers, pileated woodpeckers, white-eyed vireos, Acadian flycatchers, hooded warblers, parula warblers, prothonotary warblers, tufted titmice, Carolina wrens and others.

Later (July 1, 1912) we reached the islands after a very strenuous trip. Often we would sink through the sphagnum mats to our waists or fall forward and crack our ribs on emergent or submergent cypress knees. One of the worst annoying features of a boat route or overland trail through the cypress bays is the hidden wasp nest on the dense vegetation, or at bases of trees. One will be right on to them before he discovers his mistake.

July 22, 1922. Outside Bay—a drean between Chesser Island and the mainland:

Locality where Cope's Frog (*Rana virgatipes*) is laying its eggs. Slash pines more or less open. Young cypress. Around bases of the slash pines, cypress and gums are sphagnous mounds with more or less wide clear areas with smaller stands of *Eriocaulon*, *Xyris*, *Polygala cymosa*. Some of the *Eriocaulon* stands with *Burmannia biflora*, *Smilax Walteri* on gums. Interspersed with trees are two *Hypericums* (*H. fasciculatum*, *H. myrtifolium*). Sometimes on a stand around the base of a pine or cypress is *Rhexia mariana* or *Woodwardia virginica*. Some yellow *Utricularia* and *U. purpurea*. Much of the water with an algal scum. *Clethra alnifolium* here, also evergreen hurrah bushes (*Lyonia nitida*).

The last area described in the foregoing journal notes is more open than Minne Island Bay or some other bays. Here in this bay bases of trees or cypress knees and intermediate rosettes of vegetation are the points of growth in the water. In dense bays tussocks and hummocks in some form or other enter into the undergrowth cover. The denser the bay the fewer species of shrubs and herbs we find. Dense and luxuriant tussocks or mats of ferns (*Osmunda cinnamomea*, *O. regalis spectabilis*, *Woodwardia areolata*, and *W. virginica*) are frequent.

These tussocks or hummocks or knees or bases of trees each with its circle of sphagnum climbing around its base, is akin to the cypress bay with its outer fringe of sphagnous strand or like the sphagnum circle about the "prairie" head. It is the same in miniature or similar to an incipient head with one tree or shrub as a starting point.

Another way of defining a cypress bay or a bay of other trees is to call it a "strand" or sphagnum bog conquered or captured by trees and shrubs and lianes. In general we thought of it as applied more particularly to the swamp proper, yet the inhabitants just outside the swamp have smaller areas called "bays," such as Murray Bay and others. These smaller ponds outside the swamp are merely overgrown sphagnum bogs or sphagnous pockets.

In general cypress bays have five levels: the lowest, the sphagnum carpet; the next, the sedge level with sundews, orchids, aquatics and others; the third, higher tussocks and cypress knees with *Osmundas*, *Woodwardia areolata*, and some shrubs; the lower trees; and finally, cypress and slash pines.

Quite a few species which appear in our lists for this habitat are mainly on the island-edge side of the bay, such as *Rhododendron viscosum*, *Lyonia ligustrina*, *Viburnum cassinoides*, *V. nudum*, *Pinckneya pubens*, *Asplenium platyneuron*, *Hypericum myrtifolium*, *Sabbatia lanceolata*, *Podostigma pedicellata*, *Physostegia denticulata*, and *Aster reticulatus* and others. Here more sunlight and more shallow water are present.

A cut cypress bay like a denuded piney island looks decidedly different. On such a bay the black gums become ascendant, with white bays (*Magnolia virginiana*), sweet bays (*Persea pubescens*), red bays (*Gordonia Lasianthus*),

and red maples (*Acer rubrum*) nakedly revealed. As yet too short a period has elapsed to discover whether the cypress will reestablish itself in these cut-over areas. Will they reproduce from seedlings or from their bases? The old monarchs are gone. At present the prominent black gums and their associates are as densely if not more impassably knit together than before.

TREES:

- | | |
|--|--|
| 1 <i>Taxodium ascendens</i> Brongn. 4 | "White cypress" |
| <i>Pinus caribaea</i> Morelot 3 | "Slash pine" |
| 1 <i>Magnolia virginiana</i> L. 2 | "White bay," Swamp bay |
| 5 <i>Persca pubescens</i> (Pursh) Sarg. 3 | "Sweet bay," Red bay |
| 1 <i>Acer rubrum</i> L. | "Maple," Red maple |
| <i>Gordonia Lasianthus</i> (L.) Ellis 2 | "Red bay," "Loblolly bay,"
"Tanbay" |
| 1 <i>Nyssa Ogeche</i> Marsh. | "Tupelo," Ogescha plum |
| 2 <i>Nyssa sylvatica biflora</i> (Walt.) Sarg. 1 | Black gum, Southern gum |

SHRUBS:

- | | |
|---|---|
| 1 <i>Litsea geniculata</i> (Walt.) Nicholson | "Pond spice," "Cassena bush" |
| 2 <i>Itea virginica</i> L. 1 | "Indian Reed" |
| 1 <i>Pyrus arbutifolia</i> (L.) L. f. | "Chokecherry," Chokeberry |
| 4 <i>Cyrilla racemiflora</i> L. 1 | "Titi," "Hardwood" |
| 2 <i>Hypericum fasciculatum</i> Lam. 2 | Tall narrowleaf St. John's-wort |
| 8 <i>Hypericum myrtifolium</i> Lam. 1 | "Low pine" |
| 4 <i>Ilex Cassine</i> L. 1 | "White ivory," Dahoon |
| 1 <i>Ilex vomitoria</i> Ait. | |
| 1 <i>Ilex glabra</i> (L.) Gray | "Gallberry," Inkberry |
| <i>Ilex lucida</i> (Ait.) T. & G. 1 | "Sweet Gallberry," "Swamp
gallberry" |
| <i>Ilex myrtifolia</i> Walt. 1 | Myrtle-leaf Holly |
| 2 <i>Clethra alnifolia</i> L. 3 | "Lather leaf," White Alder |
| 1 <i>Clethra tomentosa</i> Lam. | Wooly Pepperbush |
| 3 <i>Rhododendron viscosum</i> (L.) Torr. | "Honeysuckle" |
| 7 <i>Leucothoe racemosa</i> (L.) Gray 2 | "Hurrah bush" |
| 13 <i>Andromeda phillyreifolia</i> Hook. | Low Andromeda |
| 5 <i>Lyonia ligustrina</i> (L.) D. C. 1 | Privet Andromeda |
| 2 <i>Lyonia nitida</i> (Bartr.) Fernald 3 | Evergreen "Hurrah-bush" |
| 1 <i>Gaylussacia tomentosa</i> (Pursh) Chapm. 1 | "Blue Huckleberry" |
| <i>Vaccinium corymbosum</i> L. 1 | High Bush Huckleberry |
| 1 <i>Pinckneya pubens</i> Michx. | "Possum pod," Fever tree |
| 13 <i>Viburnum nudum</i> L. 3 | "Possum haw," Larger Withe-
rod |

VINES:

- | | |
|--------------------------------------|----------------------------|
| 1 <i>Smilax Walteri</i> Pursh 2 | "Red bamboo" |
| 2 <i>Smilax laurifolia</i> L. | "Black bamboo" |
| <i>Rhus radicans</i> L. 1 | "Cow itch" |
| 5 <i>Vitis rotundifolia</i> Michx. 1 | "Bullace," "Bullace grape" |

GRASSES, SEDGES, RUSHES, ETC.

- Panicum hemitomum* Schultes 1
Carex glaucescens Ell.
Dulichium arundinaceum (L.) Britt. 2
 There are more but we missed them.

HERBS:

<i>Sphagnum</i>	
1 <i>Polypodium polypodioides</i> (L.) Hitchc.	"Tree Fern"
1 <i>Woodwardia areolata</i> (L.) Moore	Broadleaved Chain Fern
<i>Woodwardia virginica</i> (L.) Sm. 2	Swamp Fern
1 <i>Osmunda cinnamomea</i> L. 2	Cinnamon Fern
<i>Osmunda regalis</i> L. <i>spectabilis</i> (Willd.) Gray 1	"Swamp Fern"
<i>Onoclea sensibilis</i> L.	Sensitive fern
1 <i>Potamogeton hybridus</i> Michx.	Rafinesque's Pondweed
1 <i>Sagittaria graminea</i> Michx.	"Water plantain"
<i>Eriocaulon compressum</i> Lam. 2	"Lowland Button-grass"
2 <i>Xyris fimbriata</i> Ell.	"Hardhead"
2 <i>Peltandra virginica</i> (L.) Kunth.	
2 <i>Arisaema Dracontium</i> (L.) Schott	"Indian Turnip" Green Dragon
<i>Orontium aquaticum</i> L. 1	
2 <i>Burmannia biflora</i> L. 1	Two-flowered Burmannia
3 <i>Habenaria cristata</i> (Michx.) R. Br.	Crested Yellow Orchis
1 <i>Saururus cernuus</i> L. 4	Lizard's tail, Swamp Lily
<i>Sarracenia minor</i> Walt. 1	"Trumpets," "Flycatcher"
1 <i>Drosera longifolia</i> L.	"Fire grass"
<i>Polygala cymosa</i> Walt. 1	Pine Barren Pond Milkwort
1 <i>Hypericum virginicum</i> L.	Marsh "St. John'swort"
1 <i>Passiflora incarnata</i> L.	"May pop." Passion Flower
<i>Rhexia mariana</i> L. 1	Maryland Meadow Beauty
1 <i>Hydrocotyle umbellata</i> L.	Water Pennywort
1 <i>Sabbatia lanceolata</i> (Walt.) T. & G.	Lance-leaf Sabbatia
<i>Bartonia paniculata</i> (Michx.) Robinson 1	Lance-leaf Bartonia
1 <i>Podostigma pedicellata</i> (Walt.) Vail	Yellowgreen Milkweed
1 <i>Physostegia denticulata</i> (Ait.) Britt.	Few-flowered Lion's Heart
1 <i>Utricularia subulata</i> L.	Tiny Bladderwort
2 <i>Utricularia purpurea</i> Walt. 1	Purple Bladderwort
1 <i>Aster reticulatus</i> Pursh.	White-topped Aster
1 <i>Pluchea imbricata</i> (Kearney) Nash	Marsh Fleabane

ISLANDS IN OPEN SWAMP OR CYPRESS HEADS

Ecologic Synonymy (1737-1860)

1769. "... the hammocks . . . are generally surrounded by either swamp or marsh" (John Bartram, 1769: 7).
1784. (Of Great Dismal Swamp) "There is a kind of ridges, running throughout this swamp, from fifty yards to a quarter of a mile and upwards over, and one, two, four, and sometimes six miles asunder. These ridges are without water, although no earth or soil can be seen, but all between them is covered with water, from two to five and six feet deep. On these ridges are astonishing numbers of bears, wolves, panthers, wild cats, opossums, raccoons, snakes, some deer, and every kind of wild beasts; between them are vast numbers of otters, muskrats, beavers, and all kinds of amphibious animals." (Smyth, 1764, 2: 236, 237.)

1791. See "islets" "hommocks" of Hammock's synonymy. (Bartram, 1791.)
1802. "Knolls on freshwater swamp lands." (Drayton, 1802.)
- 1822-1842. (Big Cypress Swamp) "... on a little pine island, on the threshold of the formidable, the horridly gloomy-looking Cypress into which we were to plunge. . . ." (McCall, 1871: 381.) "After wading about two miles came in sight of a live-oak hummock, . . ." (p. 382). "Prophet had abandoned his village and fields, which were snugly ensconced in a heavy cypress swamp, the island on which he had established himself containing about thirty acres of very rich land, and being surrounded by a deep boggy girdle, where the water was nearly waist-deep, . . ." (p. 385). "The general character of the mainland south of Carlos a-hatchee is one vast plain of scrub cypress and stunted pine, all under water, from three to twelve inches, intersected by deep channels and heavy cypress swamps, *dotted with small islands or dry spots of cabbage-tree and pine, with here and there a large dry hummock, or long pine ridge*" (p. 392).
1848. "pine ridge; wet prairie most of the way" (Sprague, 1878: 360); "pine island" (pp. 360, 361, 362, 364); "waded a mile through cypress islands" (p. 361); "travelled today over a large open tract of country covered with pine, cabbage and oak islands, the ground is generally wet and damp—the water has evidently fallen a great deal" (p. 361); "went through a cabbage and cypress island (very thick)—water knee deep . . ." (p. 362); "cabbage island" (pp. 361, 362, 363, 364, 365); "oak islands" (pp. 361, 365); "pine, oak and cabbage hammock" (p. 366).

DISCUSSION

All over the "prairies" are little islands which either were originally higher points of land or have become so by accumulation of vegetable debris. They dot the "prairies" and are lenticular or elliptical in form. They vary in size from a single tree to large clumps of trees. These islets are called heads, houses, camp houses, and sometimes hammocks (probably after hummock). Some times they are just big enough for a trapper's daily camp or might hold five or six transient hunters for a temporary shelter, or are larger like Big Cypress Camp Island (where a United States Geological Survey party camped). They are so numerous in the swamp they receive no names on maps but the residents have many of them named. For example near Chesser Island we have Mossy House, Bear House. These heads are mere outposts of the cypress bays in their conquest of the "prairies." The bushes, vines, and trees of the bay slowly creep over the sphagnous strand border or their seeds are carried by birds to farther points in the "prairie." These latter heads soon acquire their own circle of sphagnum.

There is hardly an open "prairie" without at least *Cephalanthus occi-*



16



18



17



19



20

FIG. 16. Floyd's Island Prairie. Prairie with two zones: water-lily and maiden-cane—*Woodwardia*. The large head with the shrub and tall tree zones; the other with shrub and intermediate tree zones. Photo by J. Chester Bradley.

FIG. 17. Floyd's Island Prairie. 'Gator road through the strand. June 14, 1921.

FIG. 18. Water-lily (*Castalia*) in bloom. North fork of Suwannee Canal, June 2, 1921.

FIG. 19. "Pink water moss" (*Utricularia purpurea*). June 14, 1921.

FIG. 20. Floating heart (*Nymphoides aquaticum*). Gap-O-Grand Prairie. July 28, 1922.

SHALLOW MARSHES "PRAIRIES" AND ISLETS ("CYPRESS HEADS")

dentalis and *Decodon verticillatus* on it. Sometimes one will find one or two buttonbushes with a vine—a beginning of a head.

On Floyd's Island Prairie, June 10-15, 1921, we made some of the following notes:

June 10, 1921. "Considerable of *Cephalanthus*. . . . Some *Decodon* on 'prairie,' quite a stand in places. . . . The tussock of 'cattail' grass (*Erianthus saccharoides*) of the strand has 4 or 5 single shoots of *Pyrus arbutifolia*, a *Woodwardia virginica* or so and one or two *Lyonia ligustrina frondosa*. Head where rat trap is consists of one tree, a gum (*Nyssa s. biflora*) with a *Cephalanthus* bush with a little *Decodon* around it. 'Black bamboo' (*Smilax laurifolia*) and 'cow itch' (*Rhus radicans*) on it."

June 14, 1921. "In one place a lone 'Henderson wood' (*Ilex Cassine*) tree 5 feet high on 'prairie.' In another place a lone cypress 8 feet high. A few buttonbushes. We took a photo of big-bladed saw grass. With it was a small cypress and *Decodon*."

Or on Grand Prairie July 1922 we observed:

"After the bonnet and maiden cane zones we reach the shrubs of the heads. This head with 'titi' (*Cyrilla racemiflora*) 'hurrah bushes' (deciduous *Leucothoe racemosa*, and evergreen *Lyonia nitida*) *Smilax laurifolia*. A bigger house has *Magnolia virginiana* and *Persea pubescens* in bloom. Others have a few 'slash pines' (*Pinus caribaea*) and 'henderson-wood' (*Ilex Cassine*). On the border of some heads *Lyonia nitida* is abundant. On one 'house' are high bush huckleberry (*Vaccinium corymbosum*), *Magnolia virginiana*, *Osmunda cinnamomea*, 'henderson wood' (*Ilex Cassine*), *Smilax*, bul-lace (*Vitis rotundifolia*) and *Sonchus oleraceus* (butterweed). The last species came probably through man's agency."

The heads may have one to three zones or levels. If from the "bonnet" zone of the "prairie" we look across at a variety of heads we find many made up of shrubs alone. Others have in addition a central core of smaller trees such as *Magnolia virginiana*, *Persea pubescens*, *Acer rubrum*, *Nyssa sylvatica biflora* and *Gordonia Lasianthus*. In these the crest of the shrubs merges with the green moss of the tree tops resulting in a uniform mound of green. The third group and most picturesque group have a center of one or more trees of tall moss-draped cypress (100-150 feet high) or less often slash pine. These tree tops on their long boles tower far above the fringe of shrubs.

We have designated the houses as "cypress heads." We term them thus because the cypress is the predominating tree on the houses in the end and also because the houses have a connection with the cypress bay. It is apparent that any one of the following trees, bushes, or possibly vines of the cypress bay might start the formation of a head. The herbaceous plants are omitted from the list. They might come from the prairies, border bogs, or bays.



FIG. 21. Chase Prairie. Along the north fork of Suwannee Canal. Three head zones revealed (shrub, small tree and tall tree). June 2, 1921.

FIG. 22. "Mossy House"; half a mile southwest of Lake Sego. Two "prairie" zones revealed. July 28, 1922.

ISLETS ("CYPRESS HEADS")

TREES:

<i>Pinus caribaea</i> Morelot	"Slash pine"
<i>Taxodium ascendens</i> Brongn.	"White cypress"
<i>Magnolia virginiana</i> L.	White Bay "Swamp magnolia"
<i>Persea pubescens</i> (Pursh.) Sarg.	"Sweet Bay"
<i>Acer rubrum</i> L.	"Swamp Maple," Red maple
<i>Gordonia Lasianthus</i> (L.) Ellis	"Red bay," "Loblolly bay"
<i>Nyssa sylvatica biflora</i> (Walt.) Sarg.	"Black Gum," Southern Black Gum

SHRUBS:

<i>Itea virginica</i> L.	"Indian Reed"
<i>Pyrus arbutifolia</i> (L.) L. f.	"Chokieberry" or "Chokaberry"
<i>Cyrilla racemiflora</i> L.	"Titi," "Hardwood"
<i>Ilex Cassine</i> L.	"Hendersonwood," White holly
<i>Leucothoe racemosa</i> (L.) Gray	"Hurrah bush" Racemose Fetterbush
<i>Lyonia ligustrina</i> (L.) D. C.	Privet Andromeda
<i>Lyonia nitida</i> (Bartr.) Fernald	"Hurrah bush" Shining Fetterbush
<i>Vaccinium corymbosum</i> L.	"He-Huckleberry" Swamp Highbush Blueberry
<i>Viburnum cassinoides</i> L.	

VINES:

<i>Vitis rotundifolia</i> Michx.	"Bullace"
<i>Smilax Walteri</i> Pursh.	"Red bamboo briar"
<i>Smilax laurifolia</i> L.	"Black bamboo briar"
<i>Rhus radicans</i> L.	"Cow itch" Poison ivy

CYPRESS PONDS

Ecologic Synonymy (1737-1860)

1769. "... long grass in the ponds, where the water was about knee-deep more or less, some of which contain from 1 to 10 acres; but some ponds are a mile or two big, more or less, some surrounded close with the adjacent pine-lands, and others with large savannahs at one or both sides, with a rivulet running out, and sometimes with a bay or cypress-swamp at the head." (John Bartram, 1769: 22.)
1775. "fresh water ponds" (Am. Husbandry, 1775, 1: 377).
1788. "In the midst of the sandy levels and the forests there are here and there little lakes, often pretty deep, and apparently with no outlet or supply from other waters. In several of these fish are said to be found, coming from no one knows where. The same is true also of South Carolina, where in deserted rice-plantations rain-water assembles in large ponds, which have no running water outlet, and yet fish are found in them. The people believe that seed of the fish fall down with the rain, and the wild ducks and numerous other water fowl which visit these ponds are not suspected." (Schoepf, 1788 (1911 edit.), 2: 135.)

1799. "That exclusive body of land between Flint river, O-ke-fi-no-cau, A-la-ta-ma-ha and the eastern boundary of the Creek claims, is poor pine land, with cypress ponds and bay galls. . . . In the rainy season, which commences after midsummer, the ponds fill, and then the country is, a great part of it, covered with water; and in the dry season it is difficult to obtain water in any direction, for many miles." (Hawkins, 1798-99, Colls. Ga. Hist. Soc., 3 (1): 20-22.)
1821. "pine barren ponds" (Elliott, 1821, 1: 127); "shallow pine barren ponds" (p. 287).
1823. "The *flat pine lands*—little or no undergrowth: being thickly covered with savannas and cypress ponds and galls, it is often overflowed from them and on the least fall of rain becomes drowned." (C. Vignoles, 1823: 87.) "Cypress ponds" (p. 76).
1827. "pine barren swamps, which are natural basins, containing the waters of the surrounding country. These swamps, when covered with small coast cypress trees and knees, are usually, but improperly, termed cypress galls. Cypress knees are hollow cones, which rise from the roots of the cypress tree, from one to six feet high, and terminate in a blunt point. These never shoot up into trees, as has been imagined, from the circumstance of large cypresses being supported on hollow cones, similar in appearance; in the latter case, the tree first grows up straight, and the cone gradually swells out underneath it, as high as the highest stage of the water." (Williams, 1827: 52, 53.)
1827. "cypress ponds" (McBride, 1827: 51).
1834. "ponds" (Crawford and Couper, 1834: 3).
- 1822-1842. "large savannah or grassy pond" (McCall, 1868: 42); "grassy ponds" (p. 401); "borders of a pond" (p. 402).
1836. "the sun-lit lakes, in the centre of the prairies, bordered with beauteous flowers, . . ." (Cohen, 1836: 182).
1848. "trout ponds" (Sprague, 1848: 272); "some pine barren, interspersed with numerous ponds" (p. 281); "We entered the swamp westerly, went a mile nearly, and came to a flag-pond (very bad place to get through) water waist deep; . . ." (pp. 366, 367); "lily pond" (p. 374); "lily pond, boggy bottom" (p. 374).
1860. "ponds," "pine barren ponds" (Darby, 1860).

DISCUSSION

The cypress ponds of the islands of the Okefinokee Swamp may be somewhat different from those described by R. M. Harper (1906, pp. 75-79) for the Altamaha Grit region. His cypress ponds have more grasses and sedges than those within Okefinokee Swamp. Most of the ponds are deep enough to have a clear area in the center where an alligator might or does



FIG. 23. Bullfrog pond, Billy's Island. June 16, 1921.

FIG. 24. Pine barren pond milkwort (*Polygala cymosa*). Border of cypress pond near Chesser School. June 30, 1922.

FIG. 25. Chorophilus pond, Billy's Island. June 4, 1921.

FIG. 26. Gopher frog pond near Chesser School. Aug. 21, 1922. Photo by M. D. Pirnie.

CYPRESS PONDS

live. Aquatics come into the centers of these deeper cypress ponds. Some of the ponds near the edge of the swamp or near the edge of an island may have no clear central areas. They are then clearly isolated portions of the cypress bays. Sometimes these near the edge of an island may have a clear open sunlit center. This open water of the cypress pond is like the open "prairie" and the circle of cypress, slash pine, black gums, and bushes is an extension of the cypress bay. A cypress pond then is a miniature "prairie" and "bay" combined. Occasionally, the center may have more of the "strand" or bog character or with more shallow water or little water it may be a fern bog in the center. Some of the cypress ponds on the eastern edge are with shallower centers and have more grasses and sedges, such as R. M. Harper describes.

In general the cypress pond proper does not have numerous species. The ponds of the swamp probably have fewer forms than those outside the swamp. The moist pine barrens contribute more to the cypress and kindred ponds on the outside than within the swamp. Outside the swamp there is more sunlight and the ponds are more diverse. It will be observed that there are 35 or more species in the cypress pond list which are marked (edge). These are mainly from the moist pine barrens.

In earlier days Savery (1769) in his Survey of the Boundary Line between Georgia and the Creeks speaks of mere "ponds" or "deep ponds" along with "rivers," "swamps," "boggy branches," and "bogs" or "terrible bogs." He does not use "cypress pond." B. Hawkins, 1798 and 1799, C. Vignoles, 1823, and earlier writers employ "ponds" or "cypress ponds." Cypress galls and bay galls of these two authors are rare terms today.

A few journal notes descriptive of actual ponds follow:

"April 23, 25, May 8, 1921. Moonshine or Long Pond on Billy's Island.

"In center a clear water area, an alligator hole, the edge of it with pickerel weed (*Pontederia cordata*) in bloom. Just west of pickerel weed is a little *Saururus* in bloom, so also some smartweed, *Polygonum hydropiperoides* in bloom on the north edge. Beneath the north rim of black gums, pond clean with dead black leaves. On north and just south of the clear open water is smartweed, *Hydrocotyle umbellata*, *Pontederia* and other plants.

"On the south end by railroad is all lizard's tail. Lizard's tail along east side of the open pond and all along in the west side wherever the sunlight gets in. Middle of the pond with pickerel weed with occasional bonnets (*Castalia odorata*). Two bushes which extend into the pond are *Cephalanthus*. There is also some *Decodon* in the pond. The clear area of water is toward the north end. The outer circle is black gum with mistletoe. In gum ring are also 'Chokaberries' (*Aronia arbutifolia*) in green fruit, 'Senys' (*Ilex Cassine*) on the west edge (near inner edge not of pine lands), and 'hardwood' (*Cyrilla racemiflora*) common.

"April 24. Pond southeast of Lumber Camp. There were bonnets (*C. odorata*) in the middle also *Nymphoides aquaticum*, plenty of pickerel weed, *Hydrocotyle umbellata* and some lizard's tail in bloom. A composite 4-5 feet

high (*Bidens coronata*) in bloom. *Eriocaulon fimbriata* in pond. Around, in pond are *Cephalanthus* and other bushes. Some *Itea virginica* and red bamboo (*S. Walteri*). On east side in the cypress tree edge in the sphagnum where water was half-way to knee there are no aquatic plants between the bases of the trees. Around some of the cypress trees are He-huckleberry, sweet bays and black gums, all small." Two months later we called the open center of this pond 'Hardhead' (*Xyris*) pond.)

Sometimes a cypress pond even on the islands may dry up. One in the center of Billy's Island will suffice:

"May 6. Pond where we caught Cricket Frogs (*Acris gryllus* earlier). The pond almost dried up. A little water hole in center. Around this hole is a wide moist mud flat with no vegetation. Here a pig is rooting up transformed southern bullfrogs (*Rana grylio*). Outside the moist mud flats is a circle of grass mats or carpets under which frogs, salamanders, and snakes were hiding. Great Blue Herons and Florida Grackles walk around the water hole for pigmy sunfishes and killifishes. This pond has cypress trees moss hung and some small gums. All dry or slightly moist beneath trees. No bushes or vegetation except for the grass mat. This pond must have this experience other years."

Two ponds on the mainland east of the swamp might suffice:

"July 15 or 16, 1931. Adams Pond. Broadleaved *Woodwardia* (*W. areolata*), cypress with *Andromeda phillyreifolia*, a fine leaved *Hypericum* (*H. fasciculatum*) a broad-leaved one (*H. myrtifolium*) a pink-white composite, a spurge-like form (*Polygala cymosa*), a small tree (*Ilex myrtifolia*), and *Eriocaulon decangulare*. *Xyris* tussocks in the water serve as good hiding places for newts. This is a cypress pond with no open water."

"June 30, 1922. Pond 2 miles south of Chesser School. Pond with sedge and *Eriocaulon* outside. Next zone the run of yellow flowers we photographed (*Polygala cymosa*), *Woodwardia* and cypress. When *Woodwardia* ends open water begins. Sometimes on the outer edge *Woodwardia* merges with *Eriocaulon* directly with no *Polygala cymosa*. This is a shallower pond than we get in the center of the swamp."

It is interesting that Dr. R. M. Harper gives the following six species as the most common woody plants in a cypress pond, namely *Taxodium imbricarium*, *Pinus Elliottii*, *Nyssa biflora*, *Ilex myrtifolia*, *Hypericum myrtifolium*, and *H. fasciculatum*. Within the swamp and outside, the cypress-encircled pond with some black gums is the common type. Rarely slash pine might replace the cypress. Another common type is the black gum border. East of Chesser Island on the mainland we had one *Ilex myrtifolia* pond and a tendency toward the same in another pond. Several miles south of Chesser School we found an open pond filled with no trees or bushes except a pure stand of *Hypericum fasciculatum*. We never found a pure stand of *Litsea geniculata* but some ponds had considerable of it and a pure stand of it may be possible. Some *Woodwardia virginica* depressions with nothing else or *Eriocaulon* depressions may indicate where shallow tree ponds once stood. A study of the developmental series of these ponds would well repay more intensive studies by experts.



FIG. 27. Adams' Pond near Chesser School, Folkston, Ga. Habitat of the newt (*Notophthalmus dorsalis*). Cypress, *Woodwardia*, *Pinus* (young), *Eriocaulon*, and *Andromeda phillyreifolia*. July 15, 1921.

FIG. 28. Billy's Island. *Bufo quercicus* pond. June 16, 1921.

FIG. 29. Saddle-bag Pond, near Chesser School, Folkston, Ga. Habitat of the swamp cricket frog (*Pseudacris ocularis*). *Woodwardia* in foreground. *Taxodium* and *Pinus* in background. July 9, 1922.

CYPRESS PONDS

The list of cypress pond plants follows:

TREES:

- | | |
|--|--------------------------------|
| 1 <i>Taxodium ascendens</i> Brongn. | "White Cypress," Pond Cypress |
| 1 <i>Taxodium distichum</i> (L.) L. C. Rich. | "Black Cypress," River Cypress |
| <i>Magnolia virginiana</i> L. 2 | "White bay" |
| 4 <i>Persca pubescens</i> (Pursh) Sarg. 1 (edge) | "Sweet bay," Swamp Bay |
| 2 <i>Gordonia Lasianthus</i> (L.) Ellis 2 | "Red Bay," "Loblolly Bay" |
| <i>Nyssa sylvatica biflora</i> (Walt.) Sarg. 6 | "Black Gum," Water Tupelo |
| <i>Quercus nigra</i> L. 2 (edge) | "Water Oak" |

SHRUBS:

- | | |
|--|--|
| 1 <i>Myrica cerifera</i> L. (edge) | "Highbush Myrtle," Myrtle |
| 3 <i>Quercus pumila</i> (Walt.) (edge) | "Oak runner" |
| <i>Phorandendron flavescens</i> (Pursh) Nutt. 2 | "Mistletoe" |
| 1 <i>Litsea geniculata</i> (Walt.) Nicholson 2 | "Spice bush," Pond Spicewood |
| <i>Itea virginica</i> L. 1 | "Indian Reed," Virginian Willow |
| 4 <i>Pyrus arbutifolia</i> (L.) L. f. 2 (edge) | "Chokeberry," Chokeberry |
| 1 <i>Cyrilla racemiflora</i> L. | "Titi," "Hardwood" |
| 5 <i>Ilex Cassine</i> L. 1 (edge) | "Hendersonwood" |
| 5 <i>Ilex myrtifolia</i> Walt. 3 | Myrtleleaf Holly |
| 4 <i>Hypericum fasciculatum</i> Lam. 1 | Tall narrow-leaved "St. John's wort" |
| 4 <i>Hypericum myrtifolium</i> Lam. 2 (edge) | "Low pine" |
| <i>Decodon verticillatus</i> (L.) Ell. 1 | "Water Pin Down," Swamp Loose-strife. |
| <i>Andromeda phillyreifolia</i> Hook. 1 | Low Andromeda |
| 2 <i>Clethra alnifolia</i> L. 1 (edge) | "Lather leaf," White Alder |
| 10 <i>Gaylussacia tomentosa</i> (Pursh) Chapm. | "Blue Huckleberry," "High-bush Huckleberry" |
| 9 <i>Leucothoe racemosa</i> (L.) Gray | "Hurrah bush" |
| 2 <i>Lyonia ligustrina</i> (L.) D. C. | Privet Andromeda |
| 1 <i>Lyonia ligustrina</i> (L.) D. C. <i>foliosiflora</i> (Michx.) Fernald | |
| 5 <i>Lyonia nitida</i> (Bartr) Fernald | Evergreen "Hurrahbush," Shining Fetterbush |
| 13 <i>Vaccinium corymbosum</i> L. 2 (edge) | "He Huckleberry" |
| 8 <i>Vaccinium Myrsinites</i> Lam. | "Black Low bush Huckleberry" |
| 1 <i>Vaccinium virgatum</i> Ait. (edge) | Southern Black Huckleberry |
| 1 <i>Osmanthus americanus</i> (L.) B. & H. (edge) | "Laurel," Devilwood |
| <i>Pinckneya pubens</i> Michx. | |
| <i>Cephalanthus occidentalis</i> L. 2 | "Buttonbush, Globe-flower" |
| 9 <i>Viburnum nudum</i> L. 2 (edge) | "Possum Haw," "Possum Cods," Larger Witherod |

VINES:

- | | |
|--------------------------------------|----------------|
| 3 <i>Smilax laurifolia</i> L. (edge) | "Black bamboo" |
| 2 <i>Smilax Walteri</i> Pursh (edge) | "Red bamboo" |

GRASSES, SEDGES, RUSHES, ETC.

- | | |
|--|--|
| <i>Panicum hemitomum</i> Schultes | |
| 1 <i>Eleocharis interstincta</i> (Vahl.) R. & S. | |

1 *Dulichium arundinaceum* (L.) Britt. (edge)

Juncus repens Michx.

Juncus effusus L. (edge)

The list should be larger.

HERBS:

Sphagnum

4 *Woodwardia areolata* (L.) Moore 1

1 *Woodwardia virginica* (L.) Sm. 1

1 *Potamogeton hybridus* Michx.

4 *Sagittaria graminea* Michx. 1

1 *Sagittaria lancifolia* L.

1 *Pontederia cordata* L. 5

1 *Eriocaulon compressum* Lam. 1

1 *Eriocaulon decangulare* L. 2

Syngonanthus flavidulus Michx. 1

Xyris fimbriata Ell. 2

Xyris arnicola Small 2 (edge)

Xyris caroliniana Walt. 2 (edge)

Peltandra virginica (L.) Kunth. 1

Lachnanthes tinctoria (Walt.) Ell. 1

1 *Amianthium muscaetoxicum* (Walt.)

A. Gray (edge)

1 *Iris caroliniana* Watson 1

2 *Burmanna biflora* L.

5 *Calopogon pulchellus* (Sw.) R. Br.

Saururus cernuus L.

1 *Polygonum hydropiperoides* Michx.

Polygonum opelousana (Ridd.) Small

Brasenia Schreberi Gmel.

2 *Castalia odorata* (Ait.) Woodville and Wood 4

1 *Sarracenia minor* Walt 1 (edge)

3 *Sarracenia psittacina* Michx.

1 *Drosera longifolia* L.

3 *Drosera capillaris* Poir.

1 *Drosera brevifolia* Pursh.

1 *Psoralea virgata* Nutt. (edge)

1 *Petalostemon carneus* Michx. (edge)

1 *Linum floridanum* (Planch) Trel. (edge)

4 *Polygala cruciata* L. (edge)

5 *Polygala cymosa* Walt. 5 (edge)

1 *Polygala lutea* L. (edge)

Stillingia sylvatica L.

1 *Ascyrum stans* Michx. (edge)

1 *Ascyrum pumilum* Michx. 1 (edge)

2 *Hypericum opacum* T. & G. 1 (edge)

1 *Hypericum virginicum* L.

1 *Rhexia floridana* Nash 3

Rhexia serrulata Nutt. 1 (edge)

4 *Rhexia virginica* L. 3

2 *Ludwigia suffruticosa* Walt.

3 *Proserpinaca pectinata* Lam. (edge)

Broadleaved China Fern

"Swamp Fern"

Rafinesque's Pondweed

"Water Plantain"

"Water Plantain"

"Fireweed," Pickerelweed

"Lowland Button-grass"

"Lowland Button-grass"

"Highland Button-grass"

"Hardhead"

"Highland Hardhead"

"Hardhead"

"Wampee," Arrow Arum

Yellow Tricoma

Fly Poison

"Flag"

Two-flowered Burmannia

Grass Pink

Lizard's Tail

Mild Water Pepper

Opelousas Persicaria

"Coltsfoot"

"Bonnets"

"Trumpets"

"Trumpets"

"Firegrass"

"Firegrass"

"Fire grass"

Prairie Clover

Flax

Cross-leaf Milkwort

Pine Barren Pond Milkwort

"Love Root" "Candy Root"

"Queen's Delight"

St. Peter's-wort

Dwarf St. Peter's-wort

Opaque-leaved "St. John's-wort"

Marsh "St. John's-wort"

Florida Meadow Beauty

Meadow Beauty

Deer Grass

Ludwigia

Comb Mermaidweed



FIG. 30. Siren Run on Billy's Island. A small drain or narrow bay on an island.
May 27, 1921.

FIG. 31. Canal Run, about halfway from Billy's Island to Suwannee Canal.
A boat trail through the bay proper. June 1, 1921.

WATER COURSES ("RUNS")

2 <i>Centella asiatica</i> (L.) Urban (edge)	Asiatic Pennywort
2 <i>Hydrocotyle umbellata</i> L. 4	Water Pennywort
1 <i>Sabbatia decandra</i> (Walt.) Harp. 1 (edge)	
<i>Sabbatia dodecandra</i> (L.) B. S. P. 1 (edge)	Large-flowered Sabbatia
2 <i>Nymphoides aquaticum</i> (Walt.) Fern. 1	Larger Floating Heart
1 <i>Physostegia denticulata</i> (Ait.) Britt. (edge)	Few-flowered Lion's Heart
1 <i>Lobelia paludosa</i> Nutt.	Swamp Lobelia
1 <i>Aster reticulatus</i> Pursh (edge)	White-topped Aster
<i>Pluchea foetida</i> (L.) B. S. P. 1	Viscid Marsh Fleabane
6 <i>Bidens coronata</i> (L.) Fisch.	Golden-flowered Coreopsis
1 <i>Bidens coronata</i> L. <i>leptophylla</i> (Nutt.) Mohr. (edge)	Pine barrens Coreopsis
<i>Marshallia graminifolia</i> (Walt.) Small 1	Narrow-leaf Marshallia

RUNS

Ecologic Synonymy (1737-1860)

1791. "Conduits or drains of shallow boggy ponds or morasses" (Wm. Bartram, 1791: 197).
 1834. "bays," "small drains and narrow bays" (Crawford and Couper, 1834).

DISCUSSION

Sometimes on the islands we have narrow lines of bay growth extending from the bay far into the island. Occasionally such a narrow band may widen and expand into an open-centered cypress pond. Or sometimes such a growth might connect two cypress ponds or gum ponds and not be finally connected with the bay proper. Such growths are designated by the swamp residents as runs." One such run about one half mile from Billy Island Lumber Camp was no more than 8-10 feet in width except in places. There was water along its length in which frogs were breeding. The run was a tangle of "Chokeberries" (*Pyrus arbutifolia*), fern (*Osmunda cinnamomea*), sweet bays (*Persea pubescens*) 1-2 feet high, small pines, *Lyonia nitida*, *Ilex Cassine*, saplings, *Itca virginica*, bamboo brier, (*Smilax*), *Iris caroliniana* and sphagnum. Along the edge of this run where it merges with the piney woods were *Ilex glabra*, *Polygala cruciata*, candy root (*Polygala lutca*), *Calopogon pulchellus*, a *Vaccinium*, *Xyris* in bloom and farther away *Eriocaulon*. I think of these island runs as strictly parts of the cypress bay or as "bay heads," a term of previous times.

WATERCOURSES WITHIN THE SWAMP

Ecologic Synonymy 1737-1860)

1791. "I continued my voyage up the river . . . : in my way I observed islets or floating fields . . . , decorated with other amphibious plants, as *Senecio jacobea*, *Pericaria amphibia*, *Coreopsis bidens*, *Hydrocotyle fluitans*, and many others of less note" (Wm. Bartram, 1791: 130).



FIG. 32. Billy's Lake. The Five Sisters (*Taxodium*). Dec. 21, 1913. Photo by J. Chester Bradley.

FIG. 33. The Suwannee River. The gums with swollen bases. Dec. 1913. Photo by J. Chester Bradley.

FIG. 34. Billy's Lake. Head of lake, showing maiden-cane (floating). Sept. 1913. Photo by J. Chester Bradley.

WATERCOURSES WITHIN THE SWAMP

"Green lawns of floating aquatics." . . . (p. 138). "It is in the eddy coves, under the points and turnings of the river (Suwannee or Little San Juan), where the surface of the waters for some acres is covered with the leaves of the *Nymphaea*, *Pistia* and other amphibious herbs and grass, where the haunts and retreats of this famous fish ('trout,' large mouth black bass) are, as well as others of various tribes" (p. 228).

1822-1842. "As the sun rose the following morning, . . . I looked out upon the lake, when, to my no little surprise, the island I had observed the previous day had disappeared, and on further examination the water of the lake seemed to have receded from the shore nearly one hundred yards. It was not until I walked down to the *shore* of the lake that I discovered that the island I had noticed the day before had drifted with the wind against the shore where I stood. These floating islands, which, as I afterwards learned, are found in many parts of Orange Lake, are formed by the growth of a strictly 'water plant.'

"Of this singular plant the roots do not fix themselves in the earth, but float upon the surface of the water, deriving all their sustenance from that element—or rather I should say *fluid* and the carbon of the atmosphere. As the individual plants are brought into contact by the motion of the water, their roots, which are long and ramous, become interlaced, and in time, as they grow and increase and multiply their branches, become firmly united and compact as a mat. Upon this floor, as it were, the foliage as it falls becomes decomposed, and at length forms, in fact, a little soil, upon which the seeds of other plants dropped by birds vegetate and spring up; some of them even at this season rearing their spikes of yellow flowers above the rest of their associates."¹ (McCall, 1868: 196, 197.)

1848. "strong currents" (Sprague, 1848: 355).

DISCUSSION

The watercourses or runs in the swamp are mainly in the wooded bay areas, such as Minne Lake Run, Billy Island Run, North River, Loggy Run, etc. They are merely openings in the cypress bays, narrow ("runs") or wider ("lakes" such as Billy and Minne). The trees, shrubs, vines and herbs of the cypress bays might come to the wall or break where the watercourse begins. One of the most common vines is the bullace (*Vitis rotundifolia*) of which the bears and other animals are so fond.

As one approaches the narrowing sides of Billy's Lake he sees beautiful zones or bands of maiden cane, bladderwort, etc. Isolated patches of floating vegetation along the edges of the lake prove very fruitful for collecting animals. We used to pull rapidly these mats of vegetation over the gunwale

¹ Refers to two pages (pp. 538, 539) notes in the appendix on this matter.

into the boat, and fish, amphibians, snakes, turtles and invertebrates—(all kinds of rarities and treasures) would be revealed in the bottom of the boat. We “aped” the fishermen. They pull in these mats and let crayfish drop out of it for bait. These (maiden cane, *Eriocaulon*, sphagnum) mats, “batteries” or zones are akin to “strand” or bog formation.

Two or three journal notes will suffice:

The vegetation along Billy's Lake or in parts of the Suwannee remind one of the “floating aquatics” of the St. John's River and other Floridan rivers of William Bartram's account (1791). Of course the swamp, however, has not the “floating fields of *Pistia* . . .” which Bartram found farther south.

June 8, 1921, Billy's Lake. Plenty of *Utricularia purpurea* in bloom along edge of Billy's Lake. Quite a little yellow *Utricularia* (*U. inflata*). There is some “cow itch” (*Rhus radicans*) among the bushes. The Titi or “Hardwood” (*Cyrilla*) are in their prime. Right next the cypress wall is a strand of sphagnum, *Eriocaulon*, *Polygonum*, *Utricularia*, maiden cane, etc. Some *Decodon verticillata* near the cypress edge with the maiden cane zone outside it.

July 12, 1921. Suwannee Canal. Record maiden cane, saw grass, and other sedges and grasses, bonnets (*Castalia* and *Nymphaea*), “never wets” (*Orontium*), “flags” (*Iris*), “swamp bend down” (*Decodon*), *Utricularias*, *Pontederia* and *Peltandra*, *Sarracenia minor*, *Hydrocotyle umbellata*, *Vaccinium corymbosum*, cypress, slash pines, *Ilex Cassine*, *Leucothoe racemosa*, *Magnolia virginiana*, *Smilax Walteri* and many trees laden with Spanish moss.

June 13, 1912. Minne Lake Run. *Utricularia purpurea* in fine bloom and great profusion. When we turned off Billy's Lake we had to push through a large lily pond. Run has “bonnets” (lilies) all along. High “black cypress” all along with festoons of Spanish moss. Undergrowth of little maple, henderwood (*Ilex Cassine*), “hurrah bushes,” deciduous and evergreen (*Leucothoe racemosa* and *Lyonia nitida*.) Along edges are many swamp loosestrife (*Decodon*). Lilies are all yellow with a few exceptions. A little of “Hardwood” (*Cyrilla*) and of “Indian Reeds” (*Itca virginica*). Some areas free of aquatics. These clear areas are alligator holes. Lot of “never wets” (*Orontium*), at times filling the run. “Some “chokeberries” (*Aronia*) and “lather bushes” (*Clethra*) also along the way.

In the beginning of this study, we collected our notes under two categories, watercourses within the swamp and edges of lakes such as Billy Lake, Minne Lake, or edge of Suwannee Lake. The last is so natural now and such an integral part of the swamp's larger watercourses that we group it with Billy's Lake and Minne Lake. The combined lists follow:

TREES:

(See cypress bay list.)

SHRUBS:

16 of the 23 shrubs of the cypress bay were recorded. The following species were missing, though they may yet be recorded; they are either of the island side of the



FIG. 35. Suwannee Canal, about half a mile below the forks. June 2, 1921.
FIG. 36. Minne Lake. June 10, 1921.

WATERCOURSES WITHIN THE SWAMP

bay or from bays on outer edge of swamp or more common in cypress ponds around the swamp: *Litsea geniculata*, *Hypericum fasciculatum*, *Hypericum myrtifolium*, *Ilex myrtifolia*, *Pinckneya pubens*, *Viburnum nudum*, *Viburnum cassinoides*.

VINES:

(See list of cypress bays).

GRASS, SEDGES, RUSHES, ETC.

Panicum hemitomum Schultes

(Saw grass)

Dulichium sp.

Eleocharis prolifera Torr.

Bradley collected two different abundant sedges in Billy Lake, one a "water grass."

HERBS:

<i>Sphagnum</i> sp.	"Swamp Fern"
<i>Woodwardia virginica</i> (L.) Sm. 1	Sensitive Fern
<i>Onoclea sensibilis</i> L. 1	"Tree Fern"
2 <i>Polypodium polypodioides</i> (L.) Hitchc. 1	Cinnamon Fern
<i>Osmunda cinnamomea</i> L. 1	"Water Plantain"
1 <i>Sagittaria nutans</i> Michx.	"Water Plantain"
1 <i>Sagittaria</i> sp.	"Never Wet"
2 <i>Orontium aquaticum</i> L. 2	"Wampee," Arrow Arum
1 <i>Peltandra virginica</i> (L.) Kunth.	"Lowland Buttomgrass"
2 <i>Eriocaulon compressum</i> Lam.	"Hardhead"
<i>Xyris</i> sp.	"Fireweed," Wampee
<i>Pontederia cordata</i> L. 1	"Flag"
<i>Iris caroliniana</i> Watson 1	Mild Water Pepper
4 <i>Polygonum hydropiperoides</i> Michx.	Opelousas Persicaria
3 <i>Polygonum opelousana</i> (Ridd.) Small	"Bonnets"
1 <i>Nymphaea macrophylla</i> Small 3	"Bonnets"
1 <i>Castalia odorata</i> (Ait.) Woodville & Wood 2	"Bonnets"
1 <i>Nymphaea advena</i> Ait. 1	"Trumpets," Fly-catcher
<i>Sarracenia minor</i> Walt. 1	"Swamp Bend Down"
1 <i>Decodon verticillatus</i> (L.) Ell. 3	Maryland Meadow Beauty
2 <i>Rhexia mariana</i> L.	Water Pennywort
<i>Hydrocotyle umbellata</i> L.	Baldwin's Eryngo
2 <i>Eryngium Baldwinii</i> Spreng.	Few-flowered Lion's Heart
3 <i>Physostegia denticulata</i> (Ait.) Britt.	Fibrous Bladderwort
<i>Utricularia fibrosa</i> Walt. 1	Swollen Bladderwort
<i>Utricularia inflata</i> Walt. 2	Rush Bladderwort
<i>Utricularia juncea</i> Vahl.	"Pink Water Moss"
2 <i>Utricularia purpurea</i> Walt. 2	
5 <i>Bidens coronata</i> (L.) Fisch.	
1 <i>Bidens coronata</i> L. var. <i>leptophylla</i> (Nutt.) Mohr.	
1 <i>Eupatorium rotundifolium</i> L.	False Hoarhound

BRANCHES OR BRANCH SWAMPS

Ecologic Synonymy (1737-1860)

1784. "In the woods, especially in the lowgrounds of all the rivers, creeks and branches of water, vast quantities of reeds spontaneously vegetate . . ." (Smyth, 1784, 1: 203).



FIG. 37. Rich Woods near Spanish Creek, Folkston road. July 17, 1922. Photo by M. D. Pirnie.

FIG. 38. Starling Branch. Crossing on the Chesser Island road. July 14, 1922.

FIG. 39. Red bay (*Gordonia Lasianthus*). Edge of pine barrens near Starling Branch. July 14, 1922.

RICH WOODS NEAR SPANISH CREEK AND BRANCHES
(BRANCH SWAMPS)

1791. "savanna or bay gale" . . . (Wm. Bartram, 1791: 187).
1799. "branches" . . . (Hawkins, 1799: 20); "reedy branches" (pp. 29, 48).
1803. "it (the swamp) is watered by a vast number of streams and *drains* which generally arise within its vicinity" (Ellicott, 1803).
1819. "the numerous *drains* pouring their waters from the surrounding country into the swamp . . ." (Floyd, 1819).
1821. "springy sandy swamps and galls" . . . (S. Elliott, 1821, 1: 486).
1827. "bay galls"; "galls" (Williams, 1827: 55).
1827. "The third kind of swamps are those spongy tracts, where the waters continually ooze through the soil, and finally collect in streams and pass off. These are properly termed galls, sometimes sour, sometimes bitter lands. They are the coldest soils we have, and the waters arising through them are frequently impregnated with sulphur, vitriol, and iron. When their foundation is alluvial matter, it is usually very thin, like quagmire: the land may be shaken for acres in extent. When the base is sand, it is always a lively quicksand, very dangerous for cattle. These galls are usually covered with titi and other andromedas, lob-lolly and other laurels, vacciniums and vines." (Williams, 1827: 53.)
1827. "branches" . . . (McBride, 1827: 50, 51).
1834. "a small drain, called the . . . branch (Crawford and Couper, 1824: 2); "branches" (pp. 2-11).
1822-1842. "headwaters of the branch" (McCall, 1868: p. 40).

DISCUSSION

Branches in this region may be of two sorts: west of the Trail ridge tributaries of the swamp; and east of the ridge tributaries of the St. Mary's River. The first group may be divided into two categories. The first are the small branches one mile or less in length between the east edge of the swamp and Trail ridge. These are numerous but none ever reach the size of a creek. From Baker's Point opposite Bee Gum Lake to Wall's Point below Camp Cornelia the Chessers recognize along the east edge of the swamp some eighteen named "points," "ridges," or "heads" separated by these small "branches." These branches in general are just parts of the cypress bay ("Outside Bay") extending into the pine barrens. Moist pine barren flora more strongly enter the branch the farther it arises from the swamp. The second group of the feeders to the swamp are sometimes called branches but most of them are termed creeks. They reach from Double Branches near Cowhouse Island to Jones Creek—some ten or more creeks feeding into the swamp on the north and western edges of the swamp. No Trail Ridge limits them to one mile or less and some go several miles into the surrounding country. They too have much of the character of cypress bays but they also have some plants which low rich woodlands often acquire. We did not list

the species or collect in these areas although we visited two of these creeks in 1921.

The group which we have termed branch swamps in this phytogeographic discussion are the earlier stages or upland portions of streams, tributary to the St. Mary's River, *e.g.*, Starling Branch (Starland Branch in United States Geological Quadrangle) four miles from the St. Mary's River and near its beginnings in the east edge of Trail Ridge. These branch swamps are akin to our cypress pond borders of the swamp proper with such forms as *Alnus rugosa*, *Cornus stricta*, *Fraxinus caroliniana*, *Myrica carolinensis*, etc. added. We suppose if branch swamps were chosen in different localities they might differ materially.

Doubtless these branch swamps are somewhat like the "bay galls" and "cypress galls" of Vignoles (1823) and of earlier writers of Florida and Georgia.

TREES:

- 1 *Pinus caribaea* Morelet
- 1 *Taxodium distichum* (L.) L. C. Rich.
- Magnolia virginiana* L. 1
- Magnolia foetida* (L.) Sarg. 3
- Gordonia Lasianthus* (L.) Ellis 2
- 1 *Nyssa sylvatica biflora* (Walt.) Sarg. 1
- 2 *Nyssa Ogeche* Marsh.

- "Slash Pine"
- "White cypress" River or Bald Cypress
- "White bay," "Swamp Magnolia"
- "Loblolly," "Loblolly Bay"
- "Red bay," "Loblolly Bay"
- "Black Gum"

SHRUBS:

- Myrica carolinensis* Mill.
- 2 *Alnus rugosa* (Du Roi) Spreng.
- Phoradendron flavescens* (Pursh) Nutt.
- Itea virginica* L. 1
- Rubus* sp. 1
- 2 *Pyrus arbutifolia* (L.) L. f. 1
- Ilex Cassine* L. 2
- Ilex glabra* (L.) Gray 2
- 2 *Cornus stricta* Lam.
- 1 *Clethra alnifolia* L.
- 3 *Rhododendron viscosum* (L.) Torr.
- 2 *Lyonia ligustrina* (L.) D. C.
- 1 *Lyonia nitida* (Bartr.) Fernald 2
- 1 *Gaylussacia tomentosa* (Pursh.) Chapm.
- Fraxinus caroliniana* Mill. 1
- Cephalanthus occidentalis* L.
- 4 *Viburnum nudum* L.

- Bayberry
- "Alder"
- "Mistletoe"
- "Indian Reed"
- "Blackberry"
- "Chokeberry," Chokeberry
- "White Ivory," "Seny"
- "Gallberry," Inkberry
- Stiff Cornel
- "Lather bush," Sweet Pepper-bush
- "Honeysuckle," Swamp Honeysuckle
- Privet Andromeda
- "Hurrah bush" (evergreen)
- "Blue Huckleberry," Hoary Huckleberry
- "Water Ash," Pop Ash
- Buttonbush, Button-tree
- "Possum haw," "Possum cuds"

VINES:

- | | |
|---|-----------------------------|
| <i>Smilax laurifolia</i> L. 3 | "Black bamboo" |
| 1 <i>Vitis Baileyana</i> Munson | Bailey's Grape |
| 3 <i>Mikania scandens</i> (L.) Willd. 1 | Climbing Boneset, Hemp-weed |

HERBS:

- | | |
|--|------------------------------------|
| <i>Sphagnum</i> | |
| 4 <i>Woodwardia areolata</i> (L.) Moore | Broadleaved Chain Fern |
| <i>Osmunda cinnamomea</i> L. 2 | Cinnamon Fern |
| <i>Pontederia cordata</i> L. | "Fireweed," Pickerel Weed |
| 1 <i>Mayaca Aubletii</i> Michx. 1 | Mayaca |
| 1 <i>Iris caroliniana</i> Watson 1 | "Flag" |
| 2 <i>Burmannia biflora</i> L. | Two-flowered Burmannia |
| 1 <i>Pogonia trianthophora</i> (Sw.) B. S. P. | Nodding Pogonia |
| 2 <i>Habenaria conspicua</i> Nash. 1 | |
| 1 <i>Sarracenia psittacina</i> Michx. | "Trumpets," "Flycatcher" |
| 1 <i>Drosera longifolia</i> L. | "Firegrass," "Sundew" |
| 3 <i>Ascyrum hypericoides</i> L. 1 | "Highland St. John's-wort" |
| 1 <i>Hypericum mutilum</i> L. | Dwarf "St. John's-wort" |
| 1 <i>Hypericum fasciculatum</i> Lam. | Tall narrow-leaf "St. John's-wort" |
| 1 <i>Proserpinaca pectinata</i> Lam. | Comb Mermaid-weed |
| 1 <i>Bartonia paniculata</i> (Michx.) Robinson | Lance-leaf Bartonia |
| 1 <i>Asclepias lanceolata</i> Walt. | Few-flowered Milkweed |
| <i>Cuscuta</i> 2 | "Love-vine" "Love and Tangle" |
| <i>Ludwigia virgata</i> Michx. 1 | Slender-stemmed Ludwigia |
| | "Pink Water Moss" |
| 1 <i>Utricularia purpurea</i> Walt. | Purple Bladderwort |
| 1 <i>Utricularia subulata</i> L. | Zig-zag Bladderwort |
| <i>Eupatorium rotundifolium</i> L. | Round-leaf Thoroughwort |
| <i>Eupatorium perfoliatum</i> L. | Boneset Thoroughwort |
| 1 <i>Pluchea foetida</i> (L.) B. S. P. | Viscid Marsh Fleabane |
| 1 <i>Pluchea imbricata</i> (Kearney) Nash | Marsh Fleabane |

ST. MARY'S RIVER

RIVER SWAMP

Ecologic Synonymy (1737-1860)

1737. "In several parts of these Rivers are likewise to be seen great number of decayed Cypress and other large Trees, standing at a great distance in the Water, the Earth being entirely washed away from them in the series of many Ages." (J. Brickell, *The Natural History of North Carolina*. Dublin, 1737; Edit. 1910; J. B. Grimes, p. 8.)
1769. "deep rich swamps" (John Bartram, 1769).
1775. "the best are the white oak swamps, which have generally a clayey foundation; but these are rare in South Carolina, or else being on the large rivers are too deep to clear and drain." (American Husbandry, 1: 387.)

1779. "The river swamp lands, by proper culture and judicious management, are of inexhaustible fertility." (A. Hewatt, 1779, reprint 1836, p. 76.)
1784. "There is another peculiarity attends this river; that is, the low grounds are generally higher, next the river side, than where they adjoin the high-land; thus, by means of guts, communicating from the river to the back part of the low grounds, which is most commonly a miry swamp with causeways over it, the water of the floods is soon brought there, . . ." (Vol. I, pp. 86, 87). "There is another sort of ground, which lies low and wet, upon some of their rivers, this is called *swamp*, which in some places is in a manner useless, in others it is far the richest of all their grounds; it is a black fat earth, and bears their great staple rice, which must have in general a very rich soil, in the greatest plenty and perfection." (Smyth, 1784, 2: 74.)
1788. "We landed on the south side of Albemarle Sound, at the mouth of a small river on the low banks of which were assembled almost all the different and beautiful ever-green plants which before we had met with only here and there, and dispersed. . . . The most conspicuous of those we found together here were: *Ilex aquifolium* (Holly). *Ilex Cassine* (Carolinian Holly or Japan). *Prinos glaber* (Winterberry). *Myrica cerifera* (Candleberry-Myrtle). *Laurus Borbonia* (Bay-tree). *Bignonia sempervirens?* (Yellow-Jasmine). *Smilax laurifolia*—and other varieties of this species, which however do not hold their leaves so well as this. . . ." (Schoepf, 1783-1784, Reprint 1911, 2: 122.)
1791. ". . . and other timber trees, the same as are now growing on the river swamps, whose surface is two feet or more above the spring tides that flow at this day. . . ." (Wm. Bartram, 1791, p. 69.)
1823. "The word *swamp* is, in the signification now adopted, peculiar to America; by it is understood a tract of land lying low, but with a sound bottom, covered in rainy seasons and high waters with that element. Almost all forest trees, pines excepted, thrive best in the swamps, where the soil is rich, and when capable of being cleared and drained they are proper for the growth of rice, sugar, corn, hemp, indigo, etc. etc.
- "The *river swamps* are annually overflown, and require judicious and indefatigable attention to their embankments when in a state of cultivation. The growth common in these swamps are the swamp oak, willow oak, swamp maple, tupelo, elder, willow, swamp magnolia, black birch, sumac, cypress, black and white poplar, Florida holly, sycamore, hawthorn, etc. etc. Sometimes the land immediately on the river banks is rather higher than the grounds a little behind, which are then called back swamps; these are nearly constantly full of water, and have chiefly tupelo growth, and no underwood." (Vignoles, 1823: 90.)
1821. "river swamps" (S. Elliott, 1821, 1: 46).

1824. "high river swamps" (S. Elliott, 1824, 2: 629.)
1827. "Swamps. These may be divided into three kinds. First, those formed on the borders of rivers, by inundation; these are the richest swamps, and the most extensive. They are usually separated from the stream by a ridge of dry land, formed by the heaviest parts of the alluvial matter, which is deposited immediately after leaving the current; this ridge, or natural embankment, prevents the waters from draining off, as the surface of the rivers subside. They are, usually, densely covered with heavy timber, and this tangled with innumerable vines, which renders them almost impenetrable." (Williams, 1827, p. 52.)

THE RIVER PROPER

1769. "St. Mary's River called by the Indians Thlathlathlakuphka or Rotten Fish River" (Savery, 1769).
1790. "St. Mary's River is very crooked with a wide open marsh on each side from its mouth upwards 30 miles, where marsh is terminated by thick woods. The river then becomes nearly straight for 30 miles further, up to *Allens*, an Indian trader at the head of navigation. At this trading station, the river is like a dead creek, about four fathoms deep and ten rods wide." (Swan, 1790.)
1796. "St. Mary's is narrow, rarely more than eighty yards wide, very crooked, but deep, generally twenty-five feet water the whole course from Coleraine, the bottom a limestone rock, the sides perpendicular, to which vessels can anywhere be close to the banks; the flat swamp has everywhere a natural or artificial mound or dyke, to hinder the tide from inundating it; the river is very little increased by any rain, even in what is called the rainy season, and never so as to overflow its banks. The river being so crooked and narrow, vessels must tide up and down, their sails being seldom of any use." (Hawkins, 1796.)
1803. "The river St. Mary's is at all times navigable for top sail vessels as high as Traders Hill, and would be from thence up almost to the Swamp for boats and canoes, when the water is moderately high were it not for logs, drift wood and rafts, which in many places extend across the stream . . . the river is extremely crooked, and a large proportion of its banks are annually inundated. The upland is generally of an inferior quality, producing little beside wiregrass, pitch pine (*pinus*) and broom pine (*pinus palustris*)." (Ellicott, 1803.)
1812. "St. Mary's is the safest (harbor). It has nine feet of water at low spring tides. It runs a course of 150 miles . . . and is navigable for vessels of considerable burden for 90 miles. Its banks afford immense quantities of fine timber, suited to the W. India market. Along this river, every four or five miles are bluffs convenient for vessels to travel to and load." (Thompson, 1812. Vol. II: 475, 476.)



FIG. 40. Trader's Hill, Ga. Center of this village which on a bluff of St. Mary's River. Aug. 15, 1921.

FIG. 41. Cowford (crossing or landing), St. Mary's River. June 24, 1922.
Photo by M. D. Pirnie.

FIG. 42. Cedar Landing. July 26, 1922.

ST. MARY'S RIVER

DISCUSSION

Along the river one encounters lowland and upland forms, river edge, swamp, and bluff forms as well as hammock and grassy plain species. From mouth to Camp Pinckney tidal influences enter. To this point plants like wild rice, fish like shad, hog-choker, etc. and other coastal elements extend. From the mouth of Little St. Mary's River onward to the mouth on the marsh lands, brackish and salty forms appear. These do not enter this discussion and were not studied by us. In early times they have been put in categories such as (1) salt marsh lands, or (2) salt marshes, soft and hard (also rush land), (3) salt marshes, and brackish marshes, etc.

The area of our greatest attention from Thompson's Landing to Trader's Hill has narrow river swamps. Above the first point and below the latter one there are more extensive swamps. From Thompson's Landing (east of B. M. on Folkston-Moniack Road) to Trader's Hill are many "landings" not on the United States Geol. Survey sheet, namely Thompson's, Hurst, Stewart, Cedar, King, Cowford, Stanley, Trader's Hill landings. Thompson's and Cowford (east B. M. 77 and eastern end of Suwannee Canal) landings and Camp Pinckney received the greatest attention. The latter place (named White Sand Landing in United States Geol. Survey sheet) once was as important as Trader's Hill. At Camp Pinckney log-floating and sawing was in operation, a former important industry on the river. At Trader's Hill one of the few ferries (once important) still operates. Cowford on the St. John's River is now Jacksonville and Cowford on St. Mary's does not even appear on the United States Geol. Survey sheets, each suggestive of a former great industry of this region.

The following list of plants is primarily of the river swamp association with a few bluff or hammock forms, also included. The tree and shrub lists are long. In the shrubs the heaths are not so predominant as in some of the other associations. The vines are very important (at least 10 species). Except for an occasional grassy pine land plain or meadow, grasses do not predominate in inundated areas. Unlike the so-called "bluff hammocks" along the river on higher places, at the landings we had also some areas we occasionally called hammocks; *i.e.*, the lower river banks or embankments behind which might be swamp flora. These are not exactly comparable to the hammocks of the swamp or hammock discussions heretofore given. They are in more or less inundatable regions. The journal list of one landing will give some idea of prevalent types of flora.

THOMPSON'S LANDING

"July 9, 1922. *Lyonia ferruginea* (high), *Leucothoe racemosa*, *Viburnum obovatum*, *Serenoa serrulata*, *Vitis rotundifolia*, *Vaccinium arboreum*, *Diospyros virginiana*, *Liquidambar styraciflua*, *Magnolia virginiana*, *Acer*



FIG. 43. Camp Pinckney, near Folkston, Ga. June 19, 1922. Photo by M. D. Pirnie.

FIG. 44. St. Mary's River at Colerain, Ga. July 27, 1922.

FIG. 45. Grassy pine lowlands near St. Mary's River, Ga. Five miles south of Trader's Hill. Aug. 15, 1921.

ST. MARY'S RIVER

rubrum, *Ilex opaca*, *Betula nigra*, *Quercus virginiana*, *Sabal glabra*, *Salix Wardii*, *Cyrilla racemiflora*, *Taxodium distichum*, *Smilax* sp., *Pinus Taeda*, *Sebastiana ligustrina*, *Vaccinium caesium*, *Styrax pulverulenta*, *Gleditsia aquatica*, *Fraxinus carolinensis*." This list is essentially that of a river swamp.

TREES:

- | | |
|---|--|
| <i>Pinus palustris</i> Mill. 1 | "Long leaf Pine" |
| 3 <i>Pinus Taeda</i> L. | "Short leaf Pine," Old Field Pine |
| 1 <i>Taxodium distichum</i> (L.) L. C. Rich. 2 | "Black Cypress," Bald Cypress |
| <i>Juniperus virginiana</i> L. 3 | "Cedar" |
| <i>Sabal Palmetto</i> (Watt.) R. & S. 2 | "Cabbage palmetto" |
| 4 <i>Salix Wardi</i> Bebb. 2 | "Willow" |
| <i>Carpinus caroliniana</i> Walt. 1 | |
| 2 <i>Betula nigra</i> L. 5 | "Birch," Red Birch, Black Birch |
| 4 <i>Quercus nigra</i> L. | "Water Oak" |
| 1 <i>Quercus stellata</i> Wang. | "Post Oak," Iron Oak |
| <i>Quercus laurifolia</i> Michx. 1 | "Turkey Oak" |
| 2 <i>Quercus phellos</i> L. | Willow Oak |
| 1 <i>Quercus rubra</i> L. 1 (<i>Q. falcata</i>) | Red Oak, Yellow Oak |
| 4 <i>Quercus virginiana</i> Mill. | "Live Oak" |
| <i>Quercus virginiana</i> Mill. <i>geminata</i> (Small) Sargent 1 | "Live Oak" |
| 5 <i>Quercus marilandica</i> Muench. | Black Jack |
| 4 <i>Quercus Catesbaei</i> Michx. | Turkey Oak |
| 3 <i>Planera aquatica</i> (Walt.) Gmel. | Elm, Water Elm |
| <i>Magnolia virginiana</i> L. | "White bay" |
| <i>Magnolia foetida</i> (L.) Sarg. 1 | "Magnolia bay," "Bull Bay" |
| <i>Persca pubescens</i> (Pursh.) Sarg. 1 | "Sweet Bay" |
| <i>Liquidambar Styraciflua</i> L. 5 | "Sweet Gum" Red Gum |
| <i>Platanus occidentalis</i> L. 1 | "Plane Tree," "Sycamore" |
| 3 <i>Crataegus Marshallii</i> Eggl. | "Haw" |
| 1 <i>Gleditsia triacanthos</i> L. | "Water locust" |
| <i>Ilex opaca</i> Ait. 2 | "Holly," American Holly |
| 1 <i>Acer rubrum</i> L. 7 | "Swamp Maple," Red Maple |
| 1 <i>Cornus florida</i> L. 1 | Flowering Dogwood |
| 1 <i>Nyssa aquatica</i> L. 1 | Large "Tupelo," Cotton Gum, Tupelo Gum |
| 1 <i>Nyssa sylvatica</i> Marsh | "Highland Black Gum," Sour Gum |
| 1 <i>Nyssa sylvatica biflora</i> (Walt.) Sarg. 4 | "Black Gum" |
| <i>Nyssa Ogeche</i> Marsh 4 | "Tupelo," Ogeechee Lime |
| <i>Diospyros virginiana</i> L. 2 | "Persimmon" |

SHRUBS:

- | | |
|--|----------------------------|
| <i>Sabal glabra</i> (Mill.) Sarg. 2 | "Blue palmetto" |
| <i>Serenoa serrulata</i> (Michx.) Hook. | "Saw palmetto" |
| 1 <i>Myrica cerifera</i> L. | "Highbush Myrtle" "Myrtle" |
| <i>Alnus rugosa</i> (Du Roi) Spreng. 1 | "Alder" |
| <i>Phoradendron flavescens</i> (Pursh) Nutt. 1 | "Mistletoe" |

- 2 *Hamamelis virginiana* L.
Cercis canadensis L. 1
 2 *Amorpha glabra* Desf.
Sebastiania ligustrina (Michx.) Muell. Arg.
Rhus copallina L.

- 3 *Cyrilla racemiflora* L. 2
 2 *Ilex vomitoria* Ait.
 3 *Ascyrum hypericoides* L.
 3 *Hypericum galioides* Lam.
 3 *Hypericum myrtifolium* Lam.
 1 *Rhododendron viscosum* (L.) Torr.
 1 *Leucothoe racemosa* (L.) Gray 1

- 1 *Lyonia ferruginea* (Walt.) Nutt. 2
 1 *Vaccinium caesium* Greene
 3 *Vaccinium arborcum* Marsh 3
 2 *Vaccinium myrsinites* Lam.
 3 *Vaccinium Elliottii* Chapm.
 3 *Styrax Americana* L.
Fraxinus caroliniana Mill.
Pinckneya pubens Michx. 3
Callicarpa americana L.
 2 *Viburnum scabellum* (T. & G.) Chapm.
 8 *Viburnum obovatum* Walt.
Cephalanthus occidentalis L. 1

VINES:

- 3 *Smilax rotundifolia* L.
 2 *Smilax Beyrichii* Kunth.
 5 *Smilax Bona-nox* L.
 2 *Smilax glauca* Walt.
 2 *Smilax laurifolia* L.
 1 *Clematis crispa* L.
Rhus radicans L.
Vitis rotundifolia Michx. 2
Vitis aestivalis Michx. 1
Cissus arborea (L.) Des Moul.
 1 *Gelsemium sempervirens* (L.) Ait. f

GRASSES, SEDGES, RUSHES, ETC.

- Arundinaria tecta* (Walt.) Muhl. 2
Cenchrus pauciflorus Benth.
Dichromena latifolia Baldw.
Fimbristylis mucronucleata (Michx.) Blake

HERBS:

- Pontederia cordata* L. 2
 1 *Habenaria flava* (L.) Gray
 1 *Boehmeria cylindrica* (L.) Sw.
 3 *Eriogonum tomentosum* Michx.
Castalia odorata (Ait.) Woodville & Wood 1
 1 *Desmanthus* sp.
Hypericum mutilum L.

- "Witch Hazel"
 Red Bud
 Smooth *Amorpha*
 "Sumac," "Shumac"
 Shining Sumac
 "Titi," "Hardwood"
 Yaupon, Cassine
 "Highland St. John's-wort"
 Glossy "St. John's-wort"
 "Low pine"
 "Honeysuckle," Swamp Azalea
 "Hurrah bush," Racemose
 Fetter bush
 "Poor Grub," "Hardhead"
 "Goose berry," "Deerberry"
 "Farkle berry," "Parkerberry"
 "Black Lowbush Huckleberry"
 Elliott's Blueberry
 Powdery Storax
 "Water Ash," Pop Ash
 "Possum pod," Fever-tree
 French Mulberry
 Soft-hairy Arrow-wood
 Small *Viburnum*
 Buttonbush, Honey-balls

- "Bamboo brier"
 "Bamboo brier"
 "Blue bamboo," "China brier"
 "Black bamboo"
 Marsh Clematis
 "Cow itch"
 "Bullace"
 Summer Vine
 Pepperidge, Pepper-vine
 "Jasmine," Yellow Jessamine

- "Fireweed," Pickerel Weed
 Pale Green Orchis
 False Nettle
 Downy *Eriogonum*
 "Bonnets"
 Mimosa
 Dwarf "St. John's-wort"

1 <i>Lechea villosa</i> Ell.	Hairy Pin-weed
1 <i>Rhexia lutea</i> Walt.	Yellow Meadow Beauty
1 <i>Myriophyllum</i> sp.	Water Milfoil
1 <i>Eryngium Baldwinii</i> Spreng.	Baldwin's Eryngo
1 <i>Cynoctonum mitreola</i> (L.) Britt.	Mitrewort
<i>Sabbatia campanulata</i> (L.) Britt.	Slender Marsh Pink
<i>Sabbatia calycina</i> (Lam.) Heller	Calycine Sabbatia, Coast Sabbatia
2 <i>Asclepias perennis</i> Walt. 1	Thin-leaf Milkweed, Small- flowered Milkweed
2 <i>Asclepias lanceolata</i> Walt.	Few-flowered Milkweed
<i>Pycnanthemum hyssopifolium</i> (Benth.) Gray	Hyssop-leaf Mountain Mint
1 <i>Galium Claytoni</i> Michx.	Clayton's Bedstraw
4 <i>Eupatorium coelestinum</i> L.	Mist Flower
1 <i>Eupatorium semiserratum</i> D. C.	Small-flowered Thoroughwort
<i>Mikania scandens</i> (L.) Willd.	Climbing Hemp-weed
2 <i>Pluchea camphorata</i> (L.) D. C.	Salt Marsh Fleabane
1 <i>Helenium nudiflorum</i> Nutt.	Low Sneezeweed

RICH WOODS NEAR SPANISH CREEK

Ecologic Synonymy (1737-1860)

1769. "bluffs" (John Bartram, 1769: 7).
 1791. "bluffs on the river" (William Bartram, 1791: 16).
 1799. "fine rich flats on the creek . . ." (Hawkins, 1799: 46).
 1816. "low rich bottom" (William Baldwin, 1816: 335).
 1821. "Rich moist soil under shade" (*Mitchella repens*) (Elliott, 1821: 199);
 "richest soils not inundated" (*Aralia spinosa*) (p. 373); "most fertile
 soil" (*Liriodendron*) (Elliott, 1824: 41); "shaded rich soils" (*Melo-
 thria pendula*) (p. 662).
 1860. "rich soils" (Darby, 1860).

DISCUSSION

Several miles south of Folkston and south of Spanish Creek there is an interesting woods on the west side of a sandy ridge. Here some sphagnum occurs and one or two ponds are beside the road. It is dense woods. From this woods to one mile south of Folkston along the Folkston and Moniac Road are several interesting woodlands of more or less the same sort. To us, residents of northern states, these woods remind us more of northern woods than any other places around the swamp. Such species as *Cornus florida*, *Liriodendron Tulipifera*, *Rhus vernix*, *Aralia spinosa*, *Fraxinus americana*, *Hamamelis virginiana*, etc., are not uncommon in these parts. Doubtless many more Piedmont or northern species will be found in this stretch if ever a botanist systematically works this area.

The above synonymy must approach this habitat. For example, Drayton (1802) in his Botanical Catalogue continually refers to "mellow good soil under shade," "mellow grounds," "mellow lands," "rich land," "mellow land

inclining to moist," etc. He occasionally refers to it as of middle and upper country as well as lower country. This may show its affinities and explain its rarity about Okefinokee. Some species he gives remind one of our list. They are: *Mitchella repens*, *Ulmus* sp., *Chenopodium album*, *Angelica lucida*, *Phytolacca decandria*, *Cercis canadensis*, *Liriodendron*, *Eupatorium pilosum*, *Eupatorium perfoliatum*, *Fagus sylvatica*, *Smilax* sp., *Acer Negundo*, *Platanus* sp., *Morus rubra*, etc.

In many ways these rich moist woods have the denseness, moisture, shade and vegetal floor of the hammocks on the islands, yet they are different. They are a deciduous-forest formation, mesophytic and Piedmont in relationship. These woods along a stretch of six or eight miles accord best with Harper's River bluffs. We did not make a special study of the St. Mary's bluffs from crest to river's edge but many of the species in this list were noted by us at Trader's Hill and elsewhere at landings along the river. From branch swamp through creek swamp to river swamp there is a gradual transition. These particular habitats (Spanish Creek woods) are more than branch swamps, nearer creek swamps yet close to river swamps inasmuch as they are only two or three miles away from the St. Mary's River edge or bluffs. Most of the area, however, is not inundated.

In ecological relationships they are complex. There are river bluff, sand ridge, or dry pine barren intrusions, sand hill bog species, branch, creek or river swamp elements, and several moist pine barren forms. Hence the treatment of these woods as a separate habitat. They are in a class somewhat like R. M. Harper's Exceptional Habitats (1906, pp. 110-112). The species collected or observed follow:

TREES:

<i>Pinus rigida serotina</i> (Michx.) Loud.	Black Pine, Pond Pine
<i>Pinus caribaea</i> Morelet	"Slash Pine"
<i>Pinus Taeda</i> L.	"Short leaf Pine," Loblolly Pine
2 <i>Quercus marilandica</i> Muench.	Black Jack
2 <i>Salix Wardi</i> Bebb.	"Willow," Ward's Willow
<i>Carya glabra</i> (Mill) Spach.	"Hickory," Pignut
<i>Morus rubra</i> L.	"Mulberry," Red Mulberry
<i>Liriodendron Tulipifera</i> L.	Tulip Tree, Yellow Poplar
<i>Rhus Vernix</i> L.	Poison Sumac, "Shumac"
<i>Aralia spinosa</i> L.	"Prickly Ash," Angelica-tree
<i>Cornus florida</i> L.	Flowering Dogwood
<i>Nyssa s. biflora</i> (Walt.) Sarg.	"Black Gum," Southern Gum
<i>Nyssa Ogeche</i> Marsh	"Tupelo," Ogeechee Plum
<i>Fraxinus americana</i> L.	White Ash

SHRUBS:

<i>Sabal glabra</i> (Mill.) Sarg.	"Blue Palmetto"
<i>Myrica carolinensis</i> Mill.	Bayberry
2 <i>Castanea pumila</i> (L.) Mill.	"Chinquapin"
<i>Alnus rugosa</i> (Du Roi) Spreng.	"Alder"

Hamamelis virginiana L.
Sebastiania ligustrina (Michx.) Muell. Arg.
Rhus copallina L.
Ilex lucida (Ait.) T. & G.

Hypericum galioides Lam.
Hypericum myrtifolium Lam.
Cornus stricta Lam.
Clethra alnifolia L.
Rhododendron viscosum (L.) Torr.
Lyonia nitida (Bartr.) Fernald
Callicarpa americana L.
Chionanthus virginica L.
Viburnum nudum L.
Baccharis halimifolia L.

VINES:

3 *Clematis reticulata* Walt.
Rhus radicans L.
Vitis rotundifolia Michx.
Parthenocissus quinquefolia (L.) Planch.
Tecoma radicans (L.) Juss.

GRASSES, SEDGES, RUSHES, ETC.

Panicum Walteri Ell.
 2 *Uniola laxa* (L.) B. S. P.
Ctenium aromaticum (Walt.) Hitchc.

HERBS:

Alectris aurea Walt.
Tofieldia racemosa (Walt.) B. S. P.
Burmannia capitata (Walt.) Mart.
 2 *Habenaria cristata* (Michx.) R. Br.
Habenaria Chapmani (Small)
 2 *Polygonum setaceum* Baldw.
Phytolacca decandra L.
Oxalis filipes Small
Polygala grandiflora Walt.
Polygala incarnata L.
Euphorbia corollata L.
Piriqueta caroliniana (Walt.) Urban.
Rhexia floridana Nash.
Rhexia ciliosa Michx.
Oenothera longipedicellata (Small) Robinson
Eryngium synchaetum (Gray) Rose
Cynoctomum sessilifolium (Walt.) Gmel.
Polyprenum procumbens L.
Sabbatia campanulata (L.) Britt.
Asclepias lanceolata Walt.

Teucrium c. littorale (Bicknell) Fernald.

Pycnanthemum hyssopifolium (Benth.) Gray

Witch Hazel

Shining Sumac
 "Highbush gallberry," "Sweet
 gallberry"
 Bedstraw St. John's-wort
 "Low Pine"
 Stiff Cornel
 "Lather leaf," "Chokeberry"
 "Honeysuckle," Swamp Azalea
 Evergreen, "Hurrah Bush"
 French Mulberry
 "Old Man's Beard," Fringe tree
 "Possum haw," "Possum cuds"

"Sand cherry"
 "Cow itch"
 "Bullace"
 Virginia Creeper
 Trumpet-creeper, Cow Itch,
 Trumpet-flower

Golden Star Grass
 Viscid Tofieldia
 Capitate Burmannia
 Crested Yellow Orchis

Bristly Persicaria
 "Poke"
 Wood Sorrel
 Large-flowered Milkwort
 Nude-stemmed Milkwort
 Flowering Spurge
 Florida Meadow Beauty
 Fringed Meadow Beauty
 Long-stemmed Sundrop
 Eryngo
 Sessile-leaf Miterwort
 Procumbent Polypremum
 Slender Sabbatia
 Few-flowered Milkweed, Red
 Milkweed
 Wood Sage, American
 Germander
 Hyssop-leaf Mountain Mint

Hyptis radiata Willd.
Phlox pilosa L.
Galium pilosum Ait.
Dyschoriste humistrata (Michx.) Ktz.
Diodia hirsuta Pursh.

Diodia virginiana L.
Mitchella repens L.

2 *Melothria pendula* L.

Lobelia glandulosa Walt.
Elephantopus nudatus Gray
Eupatorium coelestinum L.
Eupatorium rotundifolium L.
Eupatorium perfoliatum L.
Eupatorium aromaticum L.

Aster reticulatus Pursh.

Erigeron pusillus Nutt.

Rudbeckia amplexans T. V. Moore

Gaillardia lanceolata Michx.

Erechtites hieracifolia (L.) Raf.

Cirsium Nuttallii D. C.

Swamp Basil
 Downy Phlox, Hairy Phlox
 Hairy Bedstraw
 Calophanes
 Purple-flowered Button-weed,
 Rough Button-weed
 Common Button Flower
 Partridge Berry
 Creeping Cucumber
 Glandular Lobelia
 Smoothish Elephant's-foot
 Mist Flower
 Round-leaf Thoroughwort
 Indian Sage
 Wild Hoarhound
 White-topped Aster
 Fleabane
 Coneflower
 Sweet Gaillardia
 Fireweed
 Smooth Thistle

HAMMOCKS

Ecologic Synonymy (1737-1860)

1741. "Oak and Hickory, or Mixt Land. There is the usual proportion of this sort, as in the neighboring provinces. It is not so high as the pine-barren, nor so low as the swamps. It takes the name of oak and hickory from the great number of those trees growing on it, not but there is a variety of others among them. It has a clay bottom, which in hot countries is esteemed the best, as it keeps the roots of trees, etc., cool. It is covered with a fine mould; is light and works easy, and most things, which are planted on it, answer very well even in the first year. . . ." (An Impartial Inquiry . . . Georgia, 1741, Colls. Ga. Hist. Soc., 1840, I: 158.) ". . . another oak and hickory or mixt land (being of a strong nature fit for grain) . . . (p. 188).
1769. "That which is called hammocky ground is generally full of large evergreen and water-oaks, mixed with red-bay and magnolia, and in many places the great palmetto or cabbage-tree . . . (John Bartram in Stork, 1769, p. 34); ". . . the hammocks of live-oaks and palmettos are generally surrounded either with swamp or marsh" (John Bartram in Stork, 1769, p. 7); ". . . maple hammocks . . ." (p. 10).
1770. "The oak land commonly lies in narrow streaks, between pine land and swamps, creek or rivers; the soil is a blackish sand, producing several kinds of oak, bay, laurel, ash, walnut, gum-tree, dog-tree, hickory, etc. . . ." (G. Milligen, Reprint, 1836, p. 468.)
1775. "Oak land is another sort; it is a black, rich sand, and produces oaks, walnut, hickory, and black mulberry-trees, and is to all intents excel-

- lent land; but the misfortune is, that the quantity of it is very small; it is found only in narrow stripes between swamps and pine barrens, and between the latter and creeks or rivers. This is the only land they have that will produce good crops of corn and indigo." (Am. Husbandry, 1775, 1: 387); "the rest, oak and hickory" (p. 407); "the slips of oak-land are not large or numerous" (2: 4); "good loam-like hickory lands" (p. 47).
1779. "The oaks and hickories delight to grow in a lower and richer (than pineland—AHW) soil, running in narrow streaks through the different eminences, which grounds, when cleared and cultivated, amply reward the industrious planter." (Hewatt, 1779; Reprint, 1836: 76.)
1784. "The high or barren land is divided into oak and pine barrens; of which the oak is always the sign of the more fertile soil . . ." (Smyth, 1784, 1: 203); "on the rich highland, it consists of hickory, sassafras, oaks, etc." (p. 93).
1791. "hommock or dark grove" (Bartram, Wm., 1791: 187); "hommocks and islets of oaks and bays projecting into the savannas" (p. 140); "islet or grove of oaks . . ." (p. 141); "green savannas, decorated with hommocks or islets of dark groves, consisting of *Magnolia grandiflora*, . . ." (p. 221); "impenetrable thickets" (p. 58).
1799. "Oak woods" (Hawkins, 1799: 20); "The settlements are generally on rich flats of oaks, hickory, poplar, walnut and mulberry (p. 24), oak flats (p. 29), oaky woods (p. 62); the swamp is cypress in hammocks, with some water oak and hickory" (p. 64). Hawkins seldom uses "hammocks."
1802. "Fertile veins of land, upon a clayey or marley foundation, occasionally intersect these barrens: producing white oak, chestnut oak, red oak, shortleaved pine, gum, hickory, dogwood, elm, beech, walnut, maple, and many other trees and shrubs, indicative of generous soils." (Drayton, 1802: 7.) "Their soil is a mixture of sand, clay and gravel; producing woods of oak and hickory, and a profusion of underwood" (p. 10).
1813. "A low rich *Hammock*, consisting principally of Live Oak, but mixed with other Oaks, and the great *Magnolia grandiflora*, . . . Grape vines, Green briars, etc. (Baldwin, 1813: 110, 111.) "That kind of land which is here called *Hammock* is generally covered with *Live Oak*. It is little elevated, calcareous, still abounding all along the coast with undecomposed oyster shells, etc." (p. 217). "Live-oak Hammock . . ." (p. 342).
1821. "Those denominated high and low *hammock*, are most esteemed for the more valuable productions, such as cotton, sugar, and corn, and are distinguished by the natural growth of large evergreen oaks, hickory, red bay, magnolia, and cabbage trees; and in many parts intermixed

with orange groves, springing from a soil composed of a light, and sometimes black mixture of loam and vegetable mould, as superstrata of various depths, having a foundation of marle and clay in undulating layers, the most inexhaustible sources of cultivation. Traces of ancient settlement and population are found in these tracts of land." (Forbes, 1821: 146.)

1824. "rich light soil" (Elliott, 1824, 2: 37); "rich shaded soils" (p. 701).

1823. "The *low hammocks* are the richest kind of lands in Florida, and capable of producing for many successive years rich crops of sugar, corn, hemp, or other equally exhausting productions; they are however clothed with so heavy a growth of timber and underwood, that the task of clearing them is appalling, and they require ditching and banking to guard them from extraordinary floods and rains. . . ." "The *high hammocks* are if possible more dense in their growth than the others, but the coat of vegetable matter is thin, and the white sand lies within a foot or eighteen inches of the surface: they are said to be notwithstanding very productive for years, without any manure, which indeed is never thought of being applied. . . ." "In addition to most of the trees found in the low hammocks, we meet laurel, red oak, chestnut oak, chinquopine, beech, persimmon, cinnamon-laurel, bastard-ash, myrtle, locust, and a numerous list of other trees: great varieties of the cane and reed are in both descriptions of hammocks: countless parasitical plants interweave and fold round the trees; the wild vine shoots up to a most surprising height, and the stalk is commonly found seven and eight inches in diameter."

"The *oak and hickory lands* produce almost exclusively those two kinds of forest trees, with occasionally gigantic pines: the underbrush is generally composed of sucker saplings of the oak and hickory; this description of land is generally disposed on the exterior edges of the high hammocks, and separate them from the pine lands. The black oak is the species most general here; the soil a rich deep-yellow sandy loam." (Vignoles, 1823: 87-89.)

"In speaking of the hammocks it should be observed, that they in general surround the large lakes and savannas, though also found scattered over the whole face of the country like islets: within them however a pond or lake is generally found, and often their size is regulated by the extent of this watery nucleus. On the exterior of the hammocks the black oak and hickory land is disposed and gradually spreads to the pine ridges, on which the hickory is often found." (Vignoles, 1823: 75.)

1834. "rich oak and hickory lands"; "rich hammock" (Crawford and Couper, 1834: 11).

1836. "hammocks" (Potter, 1836: 73, 173, 109, 4; also map); "thick hammock" (p. 109). "The alluvial bottoms and hammock lands are covered with dense forests of pine, oak, mahogany, cedar, cypress, magnolia, lob-lolly, cabbage, palm, palmetto and every variety of magnificent vegetation, which frequently extends for miles, presenting one of the most imposing sights in nature. The soil of the Hammock² lands is of the most luxuriant character, and hence the desire of speculators to drive the Seminoles off, whose reserved lands are principally of this description. . . . Hammocks are generally found adjacent to prairie swamps, and sometimes extend, of an irregular shape, several miles" (p. 4).
1836. "hammock" (Cohen, 1836: 75, 161); "thick hammocks" (pp. 76, 162, 178); "hammock land" (p. 147); "long rich hammock" (p. 179); "the banks on the opposite side were fringed with a narrow strip of hammock . . ." (p. 189); "dense hammock" (p. 188); "the rich hammock land; the *Magnolia Grandiflora*³ King of the forest . . ." (pp. 182, 183); "hammock land, up to our heads in briars and our knees in mud" (p. 147).
1848. "hammock" (Sprague, 1848: 114, 207, 272, 280, 281, 282); "dense hammock" (p. 206); "oak islands" (p. 361); "the soil of these hammocks is said to be the richest in Florida. The timber is large and of great variety. The *Magnolia grande flora* grows to a large size; many trees are from eighteen inches to two feet in diameter. At the proper season the forest is fragrant with the odor of its blossoms. The undergrowth is almost impenetrable, consisting of scrub-oak, palmetto, and grape-vines; so thick that a passage can only be made with the assistance of an axe, cutting a foot-path as through a wall. At the distance of ten feet an individual is totally obscured. The wet hammocks are more formidable but less frequented. In most of them the water stands the year round, from four to six inches deep, with a thick undergrowth, intermixed with cypress-stumps and trees. The cypress-swamps are generally filled with water, from one to three feet deep" (pp. 281, 282); "dense hammock thickets."

DISCUSSION

One early map of Georgia (Daniel Sturgis, 1818) shows the Okefinokee Swamp with two lakes and two islands. Each of the latter is labelled "Hammock." The term was thus employed for the island in Okefinokee country, one hundred years ago. Today it persists in Mixon's Hammock, Craven's

² "The Hammocks of East Florida are formed by a cluster of the richest and most redolent vegetation. The edges and interior are covered with an immense variety of small bushes, shrubs, etc., while, towering over all these, are the sweet bay, the laurel, the stately Magnolia, and indeed, every description of the most beautiful forest trees. The density of these hammocks in some places almost excludes every ray of light. . . ."

³ The Indians call it *Tolochlucco*, i.e. the "Big Bay Tree."



FIG. 46. Indian mound in a cornfield (former hammock land) Chesser Island, Ga.
Corn grows poorly on mound. Aug. 24, 1922.

FIG. 47. Hammock, the usual site for homes. The home of R. A. Chesser.
July 21, 1921.

HAMMOCKS

Hammock, Hickory Hammock, . . . all islands within the swamp and another term appears in "Middle Ground" for the island west of Mixon's Hammock.

The term is used occasionally by some residents for the small islands in the "prairies," the cypress heads. These are usually termed houses, heads, camp houses, and occasionally hammocks. In a third sense were they used when I went down through Loggy River (1912) to the Suwannee River. Then, my guide once or twice referred to some large tussocks of ferns and bushes as hammocks. This no doubt is the same as hummocks.

To add to the tangle there used to be in the early accounts of Florida at least one or two designated "Hummock Islands." In the Seminole War literature "hummock" appears. McCall (1868) for 1822-1842 often speaks of it; *e.g.*, "very edge of a hummock" (pp. 38, 39, 390, 401, 402, 403); "dense live-oak hummock which margined the river, where no horse could enter, owing to the thick underbrush and impenetrable net-work of vines" (p. 169); "the live oak, seeking the shell hummocks, continues to increase in bulk till centuries have crowned it as the King of the forest" (p. 194); "struggled through the water to the live-oak hummock" (p. 390). He in general doubtless used it for hammock land but at times one wonders if it did not also mean a dense island in cypress swamp or prairie. Our familiarity with island hammocks comes from the north end of Billy's Island, north end of Chesser Island, east end of Mixon's Hammock, and southwestern end of Floyd's Island and from a few hammock patches on the mainland.

As Forbes (1821) and Hawkins (1798, 1799) remark, it is the hammock where most signs of previous settlements occur. Today on the islands the cleared fields are where hammocks once existed or yet exist; *e.g.*, Billy's Island and Chesser Island. Other hammock areas on Floyd's Island, Mixon's, and Hickory Hammocks, etc., are not now occupied, though formerly tilled. The hammocks therefore were and are now deemed the richest lands and seem to have the densest and most numerous verdure of the land habitats.

The hammocks or the cypress bays near the hammocks were the places doubtless most inhabited by the Indians. In the hammocks usually are the larger Indian mounds, in fact most of them. In the hammock lands or in the cleared lands in the hammocks do we find most of the pottery pieces, flints and other Indian work of the past, and most of the plants apparently of human introduction previous to the lumber railroads. They have doubtless always been the habitation ground of man within the swamp.

The following journal notes are of hammock vegetation:

May 3, 1921. Billy Island west of camp. In hammock near the piney woods are *Quercus cinerea*, *Betula nigra*, *Aesculus Pavia*, *Ilex Cassine*, *Rhus radicans*, *Parthenocissus quinquefolia*, *Osmunda cinnamomea*, and *Onoclea sensibilis*.

June 10, 1921. Floyd Id. Hammock.

This hammock is a real hammock. Around camp immense "loblolly

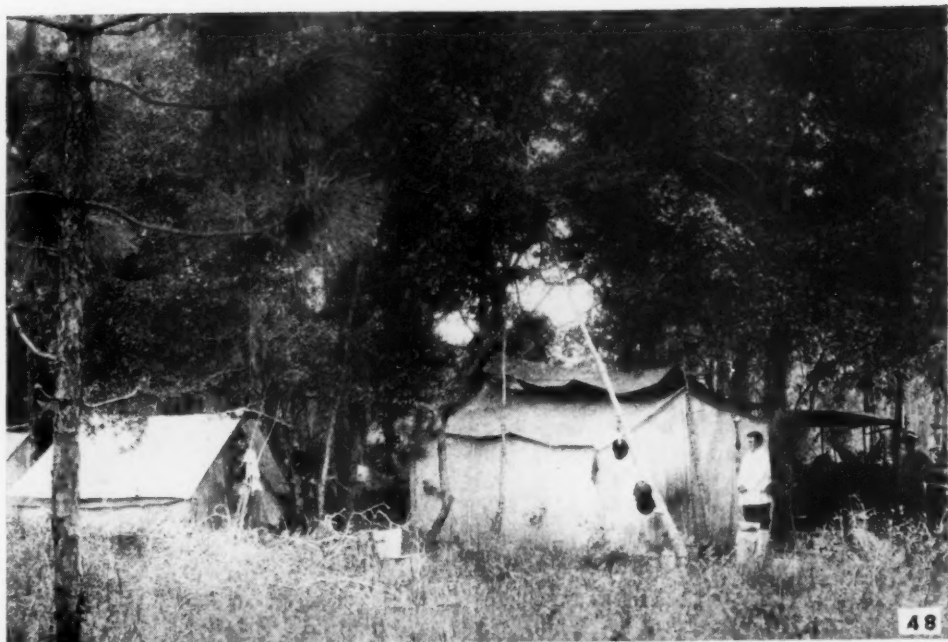


FIG. 48. Our camp in the southern end of Chesser Island hammock. Aug. 23, 1922.
FIG. 49. Floyd's Island hammock, near the landing. One of the densest hammocks of the swamp. June 11, 1921.

HAMMOCKS

bays" (*M. foetida*), "water oaks" (*Q. nigra*), "live oaks" (*Q. virginiana*), sumac (*Rhus copallina*), "bullace" grape. Along the trail no end of brake (*Pteridium latisculum*), some fine leaved *Hypericum*, *Osmanthus* (laurel) polypody fern on loblollies and decaying logs, plenty of cinnamon and sensitive ferns, some Royal ferns, very few *Liquidambar*, a few evergreen hurrah bushes (*Lyonia nitida*), high *Myrica*, few blueberries but many huckleberries (*Gaylussacia*), lots of farkle berry (*V. arborum*), gallberry (*Ilex glabra*) sparse. Occasional sassafras, *Asimina triloba* in green fruit, Chinquapin in partial fruit. Blue palmetto (*S. glabra*) near the swamp edge. Vines of poison ivy, virginia creeper, bullace and jassmine present. A "hammock pine," 4 feet through it. Some *Quercus laurifolia* and *Quercus nigra*. Under the trees and bushes or along the "cane" and "loblolly bay" trail there is no under cover of herbaceous plants. There is a complete cover of old loblolly leaves. In this found the orchid *Microstylis unifolia*.

1922. Chesser Id. Hammock. The following are common in this hammock: *Quercus laurifolia*, *Quercus geminata*, *Quercus chapmani*, *Osmanthus Americanus*, *Magnolia foetida*, *Lyonia ferruginea*, *Vaccinium arboreum*. The following fairly common: *Ilex glabra*, *Vaccinium caesium* and other species of *Vaccinium*.

The trees (23 species) make a large list and the shrubs (37 species) form a prominent part of the hammock vegetation, the heaths being the principal element. There are more species of vines (11 species) than in any other swamp habitat. Ten grasses, sedges and rushes we collected and many species we missed. Of herbs we secured 52 species, mainly perennial. These if added to the grasses, sedges and rushes make a total about equal to the combined list of trees, shrubs and vines.

The forms we have recorded or collected in the hammock within the swamp are:

TREES:

<i>Pinus</i> sp.	"Hammock Pine"
<i>Sabal palmetto</i> (Walt.) R. & S. 2	"Cabbage palmetto"
<i>Betula nigra</i> L. 1	"Birch" River birch
5 <i>Quercus Chapmanii</i> Sarg. 2	"Post Oak"
1 <i>Quercus cinerea</i> Michx. 1	"Turkey Oak"
6 <i>Quercus laurifolia</i> Michx. 3	"Turkey Oak"
1 <i>Quercus laurifolia</i> Michx. <i>rhombica</i> (Sarg.) Trel.	
6 <i>Quercus myrtifolia</i> Willd.	"Scrub Oak," "Holy Acorns"
23 <i>Quercus nigra</i> L.	"Water Oak"
<i>Quercus Prinus</i> L. 1 (<i>Q. Michauxi</i> Nutt.)	Chestnut Oak, Basket Oak
11 <i>Quercus phellos</i> L.	Willow Oak
4 <i>Quercus virginiana</i> Mill. 1	"Live Oak"
1 <i>Quercus virginiana</i> Mill. <i>geminata</i> (Small) Sarg. 4	"Live Oak"
2 <i>Magnolia foetida</i> (L.) Sarg. 11	"Loblolly Bay," "Bull Bay"
1 <i>Asimina triloba</i> (L.) Dunal. 2	"Yellow Hickory," Pawpaw
1 <i>Persea Borbonia</i> (L.) Spreng.	Red Bay
2 <i>Sassafras officinale</i> Nees & Eber. 1	"Sassafras"
<i>Liquidambar Styraciflua</i> L. 2	"Sweet Gum," Red Gum
1 <i>Aesculus Pavia</i> L. 3	Red Buckeye

- 1 *Gordonia Lasianthus* (L.) Ellis
 1 *Aralia spinosa* L. 1
Diospyros virginiana L. 1

SHRUBS:

- 2 *Sabal glabra* (Mill.) Sarg.
 4 *Myrica cerifera* L. 4
 1 *Castanea nana* Muhl.
 1 *Castanea pumila* (L.) Mill. 8
 2 *Quercus minima* (Sarg.) Small
 6 *Quercus pumila* Walt.

 4 *Asimina pygmaea* (Bart.) Gray
 3 *Rubus cuneifolius* Pursh.
Rubus sp. 1
 1 *Sebastiania ligustrina* (Michx.) Muell. Arg.
 3 *Rhus copallina* L.
Rhus obtusifolius Small 1
 5 *Cyrilla racemiflora* L.
 2 *Ilex glabra* (L.) Gray 4
Ilex Cassine L. 1

 3 *Ceanothus microphyllus* Michx.
 6 *Ascyrum tetrapetalum* (Lam.) Vail 1
 4 *Hypericum galioides* Lam. 1
 2 *Hypericum punctatum* Lam.
 1 *Andromeda phillyreifolia* Hook.
 2 *Clethra alnifolia* L.
 12 *Gaylussacia tomentosa* (Pursh.) Chapm. 2
 3 *Kalmia hirsuta* Walt. 1
 7 *Lyonia ferruginea* (Walt.) Nutt. 1
 1 *Lyonia nitida* (Bartr.) Fernald 1
 2 *Rhododendron viscosum* (L.) Torr.
 9 *Vaccinium arboreum* Marsh. 3
 6 *Vaccinium caesium* Greene 3
 7 *Vaccinium corymbosum* L.

 1 *Vaccinium Elliottii* Chapm. 1
 8 *Vaccinium Myrsinites* Lam.

 6 *Vaccinium virgatum* Ait. 1
 2 *Bumelia tenax* (L.) Willd.
 7 *Osmanthus americanus* (L.) B. & H. 4

 1 *Phoradendron Eatoni* Trelease
 1 *Lonicera sempervirens* L.

 1 *Viburnum nudum* L.
 2 *Baccharis halimifolia* L.

VINES:

- Smilax Beyrichii* Kunth.
 6 *Smilax Bona-nox* L. 1

"Red Bay," "Loblolly Bay"
 "Prickly Ash," Hercules Club
 "Persimmon"

"Blue Palmetto"
 "High bush Myrtle," "Myrtle"
 "Chinquapin"
 "Chinquapin"
 "Oak Runner," "Ground Oak"
 "Oak Runner," Lowland Oak
 Runner
 "Possum Haw," "Pop Haw"
 "Blackberry"
 "Blackberry"

"Shumac," Shining Sumac
 "Sumac," "Shumac"
 "Titi," "Hardwood"
 "Gallberry"
 "Hendersonwood," "White
 Holly"
 Small-leaved New Jersey Tea
 St. Peter's-wort
 Bed-straw. "St. John's-wort"
 Punctate "St. John's-wort"
 Low Andromeda
 "Lather leaf," White Alder
 "Blue Huckleberry"
 "Calico," "Calico-bush"
 "Poor Grub," "Hardhead"
 Evergreen "Hurrah bush"
 "Honeysuckle," White Azalea
 "Parkerberry," "Farkleberry"
 "Gooseberry," Deerberry
 "He Huckleberry," Swamp
 Highbush
 Hammock Berries, Huckleberry
 "Huckleberry," Evergreen
 Blueberry
 Southern Blueberry
 Tough Buckthorn, Ironwood
 "Laurel," Wild Olive, American
 Olive
 "Mistletoe"
 Coral Honeysuckle, Trumpet
 Honeysuckle
 "Possum Haw," "Possum Cods"

"Bamboo Briar"

- | | |
|---|-------------------------------|
| 1 <i>Smilax glauca</i> Walt. 2 | "Blue Bamboo," "China Briar" |
| 3 <i>Smilax pumila</i> Walt. | "Bamboo Briar," Dwarf Smilax |
| <i>Smilax rotundifolia</i> L. 1 | "Bamboo Briar" |
| 2 <i>Smilax Walteri</i> Pursh. | "Red Bamboo" |
| 2 <i>Rhus radicans</i> L. 4 | "Cow Itch" |
| 2 <i>Parthenocissus quinquefolia</i> (L.) Planch. 3 | Virginia Creeper |
| 1 <i>Vitis aestivalis</i> Michx. | Summer Grape |
| 6 <i>Vitis rotundifolia</i> Michx. 3 | "Bullace" |
| <i>Gelsemium sempervirens</i> (L.) Ait. f. 4 | "Jessamine," Yellow jessamine |
| 1 <i>Cuscuta arvensis</i> Bey. | Field Dodder, "Love Vine" |

GRASSES, SEDGES, RUSHES, ETC.

- 1 *Tripsacum dactyloides* L.
- 3 *Panicum lancearium* Trin.
- 1 *Panicum commutatum* Schultes.
- 1 *Panicum nitidum* Lam.
- 1 *Arundinaria tecta* (Walt.) Muhl. 1
- 2 *Cyperus cylindricus* (Ell.) Britt. 1
- 1 *Cyperus echinatus* (Ell.) Wood
- Scleria triglomerata* Michx.
- 1 *Rynchospora dodecandra* Baldw.
- 3 *Juncus aristulatus* Michx.
- 1 *Juncus scirpoides* Lam.

HERBS:

- | | |
|---|-------------------------------|
| 1 <i>Asplenium platyneuron</i> (L.) Oakes | Ebony Spleenwort |
| <i>Onoclea sensibilis</i> L. 2 | Sensitive Fern |
| 1 <i>Polypodium polypodioides</i> (L.) Hitchc. 3 | "Tree Fern" |
| <i>Pteridium latiusculum</i> (Desv.) Max. | "Highland Fern" |
| 1 <i>Osmunda cinnamomea</i> L. 3 | Cinnamon Fern |
| 4 <i>Osmunda r. spectabilis</i> (Willd.) Gray 1 | "Swamp Fern," Royal Fern |
| 1 <i>Lycopodium alopecuroides</i> L. | "Buckhorn," "Rabbit's Tail" |
| 3 <i>Commelina angustifolia</i> Michx. | "Ground Itch" |
| 4 <i>Cuthbertia graminca</i> Small | Roseate Spiderwort |
| 1 <i>Xyris arenicola</i> Small | "Highland Hardhead" |
| 1 <i>Arisaema Dracontium</i> (L.) Schott. | "Indian Turnip," Green Dragon |
| 1 <i>Peltandra virginica</i> (L.) Kunth. | "Wampee," Arrow Arum |
| 1 <i>Yucca filamentosa</i> L. | "Bear Grass" |
| 1 <i>Canna flaccida</i> Roscoe | Large-flowered Canna, Bird |
| | Shot |
| <i>Hypoxis juncea</i> Smith 1 | Yellow-eyed Grass |
| <i>Calopogon pulchellus</i> (Sw.) R. Br. 1 | Grass pink |
| 1 <i>Epidendrium conopseum</i> Ait. | |
| 1 <i>Microstylis unifolia</i> (Michx.) B. S. P. 1 | Green Adder's Mouth |
| 1 <i>Sarracenia minor</i> Walt. | "Trumpets," "Flycatcher" |
| 2 <i>Centrosema virginianum</i> (L.) Benth. | Spurred Butterfly Pea |
| 1 <i>Galactia regularis</i> (L.) B. S. P. | Milk Pea |
| 1 <i>Galactia Elliottii</i> Nutt. | Elliott's Milk Pea |
| 1 <i>Desmodium paniculatum</i> (L.) D. C. | Panicled Tick Trefoil |
| 1 <i>Crotalaria sagittalis</i> L. | Round-leaf Rattlebox |
| 1 <i>Cassia chamaecrista</i> L. | Partridge Pea |
| 1 <i>Modiola caroliniana</i> (L.) G. Don. | Carolina Mallow |

2 <i>Helianthemum corymbosum</i> Michx.	Georgia Rock-rose
1 <i>Viola</i> sp.	"Violet"
1 <i>Opuntia vulgaris</i> L.	"Prickly pear"
3 <i>Rhexia mariana</i> L.	Maryland Meadow Beauty
1 <i>Jussiaea decurrens</i> (Walt.) D. C.	Upright Primrose-Willow
2 <i>Centella asiatica</i> (L.) Urban	Asiatic Pennywort
1 <i>Sabbatia Elliottii</i> Stend.	Elliott's Sabbatia
1 <i>Pentstemon laevis</i> Ait. <i>digitalis</i> (Sweet) Gray	Foxglove Beard-tongue
1 <i>Aureolaria bignoniiflora</i> (Small)	False Foxglove
2 <i>Physalis viscosa</i> L.	Stellate Ground Cherry
1 <i>Galium hispidulum</i> Michx.	Coast Bedstraw
1 <i>Galium Claytoni</i> Michx.	Clayton's Bedstraw
3 <i>Mitchella repens</i> L. 1	Partridge Berry
1 <i>Elephantopus nudatus</i> Gray	Bare-stemmed Elephant's-foot
1 <i>Chrysopsis mariana</i> (L.) Ell.	Maryland Golden Aster
2 <i>Chrysopsis graminifolia</i> (Michx.) Nutt.	Silver leaf Golden Aster, "Goat Grass"
2 <i>Solidago odora</i> Ait. 1	Sweet Golden-rod
1 <i>Aster squarrosus</i> Walt.	
2 <i>Aster dumosus</i> L. <i>coridifolius</i> (Michx.) T. & G.	Many-leaved Bush Aster
6 <i>Aster dumosus</i> L. <i>subulacifolius</i> T. & G.	Small-leaf Bushy Aster
2 <i>Erigeron philadelphicus</i> L.	Philadelphia Daisy Fleabane
3 <i>Rudbeckia hirta</i> L.	Coneflower
<i>Helianthus schweinitzii</i> T. & G.	Schweinitz's Sunflower
<i>Bidens coronata</i> (L.) Fisch.	Southern Tickseed, Sunflower
<i>Bidens coronata</i> L. <i>leptophylla</i> (Nutt.) Mohr.	Pine-barrens Coreopsis
<i>Helenium nudiflorum</i> Nutt.	Low Sneezewood

OLD FIELDS

A term which comes into common names of animals and plants is "old fields." Thus we have "old field pine" (*Pinus taeda*), "old field mouse" (*Peromyscus subgriseus*), "old field lark" (meadow lark) "old field-plover" (black-bellied plover). To us, newcomers in 1912-1922, it was troublesome at first. To some old, now unoccupied, hammock clearings occasionally we would hear "old fields" applied. Assuming they were usually cleared in hammock ground we attached old fields to hammocks as have some other workers. But later, on the east side and outside the swamp, cleared but now unoccupied pine lands might be designated "Mr. —'s old fields" or "old fields." Finally on Floyd's Island when we were in the hammock one resident referred to an "old field, now a fine *Loblolly bay*." (See cypress bay discussion).

Apropos the point that "old fields" does not apply always to hammocks, we observe that Mills (1826, p. 482) remarks, "At present there are many waste *old fields*, both high lands, and river swamp, which, thirty years ago, were in the highest state of cultivation. . . ."

John Bartram in 1767 in one place speaks of "cleared old fields." J. F. D. Smyth (1784, Vol. I, p. 151) holds persimmons grow "in old fields, as they term such places where the timber has been cut down, the land worn out,

impoverished, or tired with culture, and young trees have not sprung up. . . ."

In 1798 and 1799 Hawkins notes that "there are a few blackberries in the *Old fields*" (p. 24); observes that "the Indians have lately moved out and settled in villages and the town will soon be an *old field*" (p. 45); and records the same process, thus "within this scope are four islands, which were formerly cultivated, but are now old fields margined with cane" (p. 28). Drayton (1802) says "Scarlet Strawberry (*Fragaria vesca*) grows in upper country: in Indian old fields, . . ."; "Catsfoot or Life Everlasting (*Gnaphalium margaritaceum?*) grows in old fields in the lower country." Later Forbes (1821: 123) explains thus: "Mention is often made of the . . . and old fields of the Apalachees as deserving of notice . . . it is agreed on all hands, that traces of the latter (old fields) are exhibited to this day, in corn hills, pieces of iron and brass castings, nails, etc. But the general and most fair presumption is, that large tracts have formerly been cleared away by the Spaniards, or Indians, and now go by the name of "the old fields." Two years later Vignoles (1823: 86) merely alludes to them: "The general character of the Florida lands is light: sands of different granulations, and sandy loams based upon limestone or clay at a variety of depth, are what chiefly are found; and from this lightness they are perhaps not capable of bearing a succession of exhausting crops; but nevertheless the land when thrown into *old fields* soon renovates itself, from a fertilizing principle which pervades the air, and subsides to the earth . . . etc."

In the Seminole War period Sprague (1848) speaks of the "abandoned fields" of the Indians. In much the same way Cohen (1836) speaks of discovering Indians in an "old Field." Like other old and rare vegetative terms it still persists with the old residents.

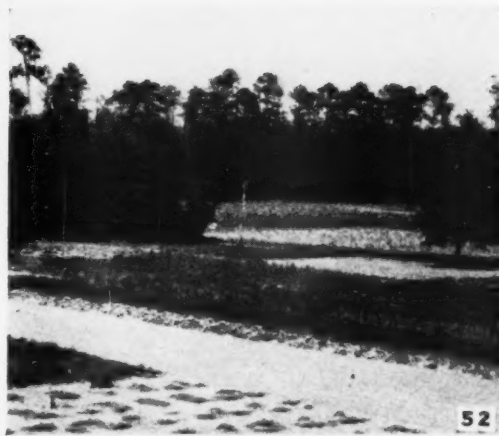
CLEARED AND CULTIVATED FIELDS, ROADSIDES AND RAILROADS

Ecologic Synonymy (1737-1860)

1821. "Cultivated land and around buildings" (Elliott, 1821: 458).

DISCUSSION

Little effort was made to assemble these plants which are largely exotic. At first the notes were gathered under the above two groups of headings but are herein grouped as one because somewhat similar in character and because fragmentary in our notes. We made no effort to attempt a list of cultivated useful plants, trees and shrubs; and made a feeble effort at collections of weeds. These records are almost entirely from Billy's Island and Chesser Island with a few added from the region near the east edge of the swamp and from Mixon's Ferry. No attempts at collections in Waycross, Fargo, Folkston, etc. were made. The herbs and grasses are largely from the cleared fields of the Lees on Billy's Island and from fields of the Chessers on Chesser



- FIG. 50. Billy's Island. View from water tower across cultivated fields toward Billy's Landing. June 20, 1921.
 FIG. 51. Chesser Island. Vannie Chesser (age 6) hoeing chufas or "chufers," 1922. Photo by M. D. Pirnie.
 FIG. 52. Billy's Island. View from water tower across cultivated fields toward the hammock. June 20, 1921.
 FIG. 53. Billy's Island. Pools along the temporary lumber railroad. May 22, 1921.
 FIG. 54. Mixon's Ferry. Sugar cane patch. Aug. 3, 1921.

CULTIVATED FIELDS

Island. Of the herbs there are 64 species; of grass, sedges, rushes, 13 species; of shrubs 7 species and of trees 13 species.

LIST OF PLANTS

TREES:

<i>Juniperus virginiana</i> L.	"Cedar"
1 <i>Quercus prinus</i> L. (<i>Q. Michauxi</i> Nutt.)	Cow Oak
1 <i>Platanus occidentalis</i> L.	"Plane tree," "Sycamore"
1 <i>Pyrus communis</i> L.	Pear
1 <i>Prunus angustifolia</i> Marsh.	"Wild Plum"
<i>Prunus persica</i> (L.) Stokes	"Peach"
<i>Melia Azedarach</i> L.	"China-berry"
<i>Tamarix gallica</i> L.	
<i>Lagerstroemia indica</i> L.	"Crepe myrtle"
<i>Nerium Oleander</i> L.	
<i>Punica Granatum</i> L.	
<i>Chionanthus virginica</i> L.	"Old Man's Beard," Flowering Ash, Graybeard
<i>Sassafras officinale</i> Nees & Eber.	

SHRUBS:

<i>Salix Wardi</i> Bebb	"Willow," Ward's Willow
<i>Ficus carica</i> L.	
<i>Cassia bahamensis</i> Mill.	"Golden"
<i>Daubentonia longifolia</i> (Cav.) D. C.	
<i>Asimina angustifolia</i> Gray.	"Pop Haw," "Possum Haw"
<i>Hibiscus militaris</i> Cav.	
<i>Callicarpa americana</i> L.	French Mulberry

GRASSES, SEDGES, ETC.:

Ctenium aromaticum (Walt.) Hitchc.
Sorghastrum Elliottii (Mohr.) Nash
Sorghum halepense (L.) Pers.
Setaria imberbis R. & S.
Uniola laxa (L.) B. S. P.
Panicum scoparium Lam.
Panicum nitidum Lam.
Cyperus echinatus (Ell.) Wood
Fimbristylis autumnalis (L.) R. & S.
Stenophyllus floridanus Britt.
Stenophyllus coarctatus (Ell.) Britt.
Juncus aristulatus Michx.
Juncus scirpoides Lam.

HERBS:

<i>Rumex hastatulus</i> Baldw.	Engelmann's Sorrel
<i>Chenopodium a. anthelminticum</i> L.	Wormseed
<i>Cuthbertia graminea</i> Small	Roseate Spiderwort
<i>Mollugo verticillata</i> L.	Carpet weed
<i>Portulaca pilosa</i> L.	"Cacket," Red-flowered Purs- lane
<i>Portulaca oleracea</i> L.	Common Purslane
<i>Centrosema virginianum</i> (L.) Benth.	Spurred Butterfly Pea
<i>Sesbania vesicaria</i> Ell.	

- Desmodium canescens* (L.) D. C.
Oxalis acetosella L.
Oxalis europaea Jord.
Geranium carolinianum L.
2 *Croton glandulosus* L.
Euphorbia maculata L.
Stillingia sylvatica L.
Kosteletskyia virginica (L.) Presl.
Hibiscus aculeatus Walt.
- Sida rhombifolia* L.
Pavonia hastata Cav.
Hypericum punctatum Lam.
Helianthemum corymbosum Michx.
Viola zittata Greene
Passiflora incarnata L.
Opuntia vulgaris Mill.
Lythrum lanceolatum Ell.
Rhexia mariana L.
Ludwigia virgata Michx.
Oenothera fruticosa L.
Oxypolis filiformis (Walt.) Britt.
Foeniculum vulgare Hill
Ipomoea Quamoclit L.
Ipomoea speciosa Walt.
Ipomoea hederacea Jacq.
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Physalis angulata L.
Solanum
Datura Stramonium L.
- Ruellia noctiflora* (Nees) Gray
Galium triflorum Michx.
- Diodia hirsuta* Pursh.
Diodia teres Walt.
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- Vernonia angustifolia* Michx.
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Erigeron pusillus Nutt.
Pluchea foetida (L.) B. S. P.
Gnaphalium spathulatum Lam.
Gnaphalium obtusifolium L.
Acanthospermum australe (L.) Ktse.
Ambrosia artemisiifolia L.
- Hoary Tick Trefoil
 Sheep Sorrel, Wood Sorrel
 Wood Sorrel
 Crane's Bill
 Nettle leaf Tragia
 Spotted Spurge
 "Queens Delight"
 Virginia Kosteletzkya
 Rough Rose Mallow, Halbert-
 leaf Rose Mallow
 Spiny Sida
- Punctate "St. John's-wort"
 Georgia Rockrose
 Lance-leaved Violet
 "May Pop," Passion Vine
 "Prickly Pear"
 Lance-leaf Loosestrife
 Maryland Meadow Beauty
 Slender-stemmed Ludwigia
 Sundrops
 False Dropwort
 Fennel
 Cypress Vine, Indian Pink
 Arrow-leaf Morning Glory
 Ivy-leaf Morning Glory
 Awned Mountain Mint
 Swamp Basil
 Foxglove, Beard-tongue
 Stellate Ground Cherry
 Cut-leaf Ground Cherry
 Nightshade
 "Jimson Weed," Common
 Thorn Apple
 Night-blooming Ruellia
 Fragrant Bedstraw, Sweet-
 scented Bedstraw
 Hirsute Button-weed
- Perfoliate Venus's Looking-
 glass
 Narrow-leaf Vernonia
 Grass-leaf, Golden Aster
 Many-leaved Bushy Aster
 Daisy Fleabane
- Viscid Marsh Fleabane
 Spathulate Everlasting
 Sweet Life Everlasting
- Hog-weed Bitterweed

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Pentstemon l. digitalis (Sweet) Gray
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Solanum
Datura Stramonium L.

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Gnaphalium obtusifolium L.
Acanthospermum australe (L.) Ktse.
Ambrosia artemisiifolia L.

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 Nettle leaf Tragia
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 Stellate Ground Cherry
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 Night-blooming Ruellia
 Fragrant Bedstraw, Sweet-
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 Hirsute Button-weed

 Perfoliate Venus's Looking-
 glass
 Narrow-leaf Vernonia
 Grass-leaf, Golden Aster
 Many-leaved Bushy Aster
 Daisy Fleabane

 Viscid Marsh Fleabane
 Spathulate Everlasting
 Sweet Life Everlasting

 Hog-weed Bitterweed

<i>Rudbeckia hirta</i> L.	Coneflower
<i>Helianthus Floridanus</i> Gray	Sunflower
<i>Marshallia graminifolia</i> (Ward) Small	Narrow-leaf Marshallia
<i>Helenium tenuifolium</i> Nutt.	Fine leaved Sneezeweed
<i>Erechtites hieracifolia</i> (L.) Raf.	Fireweed Pilewort
<i>Cirsium Nuttallii</i> D. C.	Smooth Thistle
<i>Hieracium</i> sp.	Hawkweed
<i>Krigia virginica</i> (L.) Willd.	"Rabbit Grass," Virginia Goat's Beard
<i>Pterocaulon undulatum</i> (Walt.)	"Black root"
<i>Pyrrhopappus carolinianus</i> (Walt.) D. C.	False Dandelion
<i>Tragopogon pratensis</i> L.	Goat's Beard, Meadow Salsify

MOIST PINE BARRENS

Ecologic Synonymy (1737-1860)

1765-1766. "pine-lands" (Bartram, 1769).

1784. "The land all around it is somewhat higher than it is within it [Dismal Swamp], and is flat, sandy, wet, and barren" (Smyth, 1784, 2: 239); "It is likewise totally a wide extended dead flat, covered in a thousand places with stagnated water. . . ." (p. 94).

1788. "flat sandy land covered with pine-forest" (Schoepf, 1788, edit. 1911, 2: 134).

1791. "savannas," "flowery savannas" (Wm. Bartram 1791: 303); "wet bay-gale or savanna pine-lands" (p. 197).

1799. "poor pine land with cypress ponds and bay galls" (Hawkins, 1799: 20); "the poorest of the land bordering on the cypress ponds" (p. 21); "Back of this broken pine barren there are cypress ponds and veins of reeds in the branches" (p. 23); "pine land with reedy branches, a fine range for cattle and horses" (same, p. 26); "broken piny woods" (p. 29); "poor pine barren flat" (p. 65).

1821. "pinelands" (Forbes, 1821: 13).

1821. "wet pine barrens" (Elliott, 1821: 13) "damp pine barrens" (p. 19); "flat pine barrens" (p. 12); "low pine barrens" (p. 345).

1823. "The *flat pine lands* are of themselves of two kinds: The one sort covered with a thick and luxuriant growth of berry bushes, dwarf bays and laurels, with grass only in patches, and the pine trees sparsely scattered over the ground: the other kind has little or no undergrowth: being thickly covered with savannas and cypress ponds and galls, it is often overflowed from them and on the least fall of rain becomes drowned; the herbage however is generally plentiful" (Vignoles, 1823: 87).

"The pine lands however are not all of the same elevated character: many of them being flat and covered with gallberry and huckle berry bushes: and sometimes interspersed with cypress ponds and bay galls:

these however are always in the vicinity of the sources of the streams, and are but rarely found on the *plateau*; but nevertheless like all the pine ranges, they afford excellent pasturage for cattle, and if sown with the artificial grasses would procure abundant crops" (Vignoles, 1823: 75, 76). "The *pine land savannas* have a very black and rich appearance, but notwithstanding they contain only white sands, though the clay beneath is perhaps nearer the surface; they are merely sinks or drains to the higher grounds, their low situation preventing the growth of pines." (p. 89).

1827. "pine woods—edges of savannas and streams" (Williams, 1827: 40); "damp flat plains" (p. 40); "flat grounds" (p. 43); "pine barren" (p. 43); "savanna edges" (p. 43); "wet barrens" (p. 44).
1834. "low pine barren," "low level pine barren," "a flat and low district of pine land," "low pine land" (Crawford and Couper, 1834: 3, 4, 10).
1836. "The horses ford it with great difficulty, after toiling through a long rich hammock, preceded by an extensive gall." (Cohen, 1836: 179) "indeed the galls and palmettos are dabbled with Indian gore." (p. 162).
1848. "After emerging from the swamp, we came to more open country, composed of low pine (ground damp) interspersed with small cypress swamps" (Sprague, 1848: 369).
1860. "wet pine barrens," "wet places in pine barrens," "damp soils," "wet sandy pine barrens," "wet places," "damp pine barrens," "moist soils" (Darby, 1860).

DISCUSSION

Most of the habitats in early accounts mentioned as margins of "swamps," "pine barren ponds," "galls," "savannas," etc. doubtless were the moist pine barrens of Harper (1906). It is interesting to see that Elliott (1821-24) used, "damp," "flat," "low" and "wet" for these pine lands. In our own field notes we usually called them "wet pine barrens."

In the earlier maps from Romans (1775) onward, there are many cartographers such as Wm. Faden (1777) who represents one island in the swamp with "Highland" or "The Highland" written through its center. Some might interpret this as dry pine barrens but "Highland" here must be used as "Island." Today residents speak of "Highland" and "Lowland Button grasses" (*Eriocaulon*), "Highland and Lowland Myrtle," "Highland and Lowland St. John's-wort" and make similar distinctions in other plants. In the animals we have the same in "Highland Moccasin" (for garter snake, *Eutaenia sirtalis*) as opposed to water moccasins, (*Natrix*) cottonmouth moccasins (*Agkistrodon piscivorus*) and other moccasins which are more aquatic forms. One resident said there was a land form of *Nyssa sylvatica biflora* and called it "High Ground Gum." This carries us back one hundred years to Elliott (1824, 2: 684). "Highland" on the island may be no more than



FIG. 55. Billy's Island. Piney woods in winter. Dec. 1913. Photo by J. Chester Bradley.

FIG. 56. The Pocket. Piney woods burnt over. Dec. 18, 1913. Photo by J. Chester Bradley.

FIG. 57. Hilliard, Fla. Moist pine barrens after four inches of rain. Habitat of spade-foots. Aug. 17, 1922.

MOIST PINE BARRENS

moist pine barrens for some of the islands are scarcely above the level of the swamp. "Highland Myrtle," however, might signify dry pine barrens. The terms "Highland" and "Lowland" in general in this region doubtless mean "on island," "on the mainland" (highland), and "in the swamp" (lowland); or, put in another way, may be "out on the hill" and "in the swamp."

"An Impartial Inquiry—Georgia," 1741 (Reprint 1840: 158) says "The soil is different, as the land is divided into high and lower grounds." Smyth (1784) on the James River (1: 58, 59) speaks of "low Grounds" and "highland," "low grounds" (pp. 85, 86, 92, 93) on the Roanoke River, "first and second low grounds" and "highlands" (p. 203) near Camden. Baldwin (1813) employs "low and high hammocks" and "highlands." Hawkins (1799) speaks of "uplands" and William Bartram (1791: 279) uses "highland" for animals in such expressions as "the highland frogs, commonly called toads. . . ." J. Drayton (1802) in his Botanical Catalogue (pp. 60-87) is continually using "highland" and "lowland."

In 1912 the Lees informed us that they burnt Billy's Island to improve the growth of grass and to keep the undergrowth down. Mr. R. A. Chesser said they burnt the pine barrens in March or in the spring. In many places an island or region around the swamp is annually fired. Some residents and hunters felt that game such as deer as well as cattle came to eat the more succulent growth which followed burning. When we were on Floyd's Island in June, 1912 a party had just left and the Island was still smoldering from hammock's end to hammock's end. They destroyed the underbrush to enable them the better to see the game in subsequent hunting. Sometimes, then, residents resorted to this old Indian practice for better fodder. At times more profligate reasons dictated on lands on which no one lived. If the residents felt their own lands suffered severely they no doubt would have ceased the practice. The naturalist dislikes fire and some things suffer, yet it is doubtless not so serious a loss in these open pine barrens. Apparently they revive and come back rapidly. The pinelands are nevertheless desolate in appearance after a fire and no place for a naturalist. Two or three historical allusions to this practice will suffice:

Brickell (1737, 1911 edit.: 13) remarks that "the *Indians* in their Hunting Matches set these Places on Fire at certain Seasons of the Year, by which Means they drive out the Game, and kill vast Numbers of them." "An Impartial Inquiry . . . , Georgia, 1741, (Reprint 1840: 159) remarks that "by frequent burning, the grass becomes finer, and makes a very good hay for foddering cattle in the winter." In one place William Bartram (1791: 164) remarks that "The trees and shrubs which cover these extensive wilds, are about five or six feet high, and seem to be kept down by the annual firing of the deserts, rather than the barrenness of the soil. . . ." Of the pellucid Suwannee River he writes (p. 225) "in all the flat countries of Carolina and

Florida, except this isthmus, the waters of the river are, in some degree, turgid, and have a dark hue, owing to the annual firing of the forests and plains, and afterwards the heavy rains washing the light surface of the burnt earth into rivulets. . . ." In another instance he notes a firing in the fall of the year. Drayton (1802: 7) writes, "Through this tract of country, the pine barrens have little or no underwood, some species of shrub oak excepted; the ground being generally covered with coarse wild grasses. This is probably not its natural appearance; but is caused by the custom of burning the dry grass in the spring, in order to hasten early pasturage, at the same time destroying the young shrubs, which would, otherwise, shoot up a growth of underwood." In 1821 J. G. Forbes repeats Bartram's observation regarding the Suwannee River. Vignoles (1823: 78) remarks, "Here and there a solitary green pine remains that escaped the ravages of the original fire, which succeeded by almost annual ones, have kept the woods in a state of continual undergrowth." Williams (1827: 43) writes of the pine barrens thus: "there are very few spots, indeed, of pine barrens, that are not covered with grass: in many dry ridges, the heat of the summer kills the stem, while the roots remain entire; and the fire is thought to improve its growth; the herdsman, accordingly, fire the barrens, at regular seasons. Deer, as well as cattle, may always be found on places recently burnt over."

In 1817 Dr. Baldwin who spent much time at St. Mary's, Ga. writes (pp. 217, 218), "There is, as yet, but little *naked sandy desert*; but should the weather continue, a few years longer, as dry as it has been for the last two years,—and fires should rage as extensively, destroying the vegetation,—a large portion of the maritime part of Georgia would be rendered like the *deserts of Arabia*! Were I a member of the Georgia Legislature, my most strenuous exertions would be made to prevent, by law, the burning of the Forests,—which impoverishes the land, and does incalculable mischief, and without one single advantage resulting from it. Yet many of the stupid people do it, to destroy the rattlesnakes—make the grass grow . . . and I believe for the *fun* of looking at it."

Some of the residents felt the practice of burning destroyed the berry bushes and berries. Possibly B. Hawkins (1799 pp. 21, 24) intimates this in the following excerpts: "Throughout the whole of this country, there is but little fruit of any kind; in some of the rich flats there are fox grapes and muscadines; the *small cluster grapes of the hills is destroyed by fire*, and the persimmon, haw and chestnut, by the hatchet; there are a few blackberries in the old fields, red haws on the poor sand hills, and strawberries thinly scattered, but not a gooseberry, raspberry or currant, in the land." "The wortleberry is to be found in the swamps, and on the poorest of the land bordering on the cypress ponds. *When the woods are not burnt for a year or more the latter are on dwarf bushes, grow larger, and in great abundance.*"



FIG. 58. Honey Island near its western end. Pine lands immediately after cutting the longleaf pine.
 FIG. 59. Billy's Island. A seedling pine. Dec. 31, 1913. Photo by J. Chester Bradley.
 FIG. 60. Trumpets or pitcher-plants, a characteristic plant of moist pine barrens. Summer 1922. Photo by M. D. Pirnie.

MOIST PINE BARRENS

"The dwarf saw palmetto, when the woods are not burnt, in like manner bears a cluster of berries on a single stem which are eaten by bear, deer, turkeys and Indians."

One journal entry will suffice for an actual collecting trip in the moist pine barrens:

"June 1, 1921. Wet pine barrens Hopkins to Waycross. More or less either side of the lumber railroad a yellow *Hypericum* (*H. fasciculatum*) a meadow beauty (*Rhexia glabella*) a ladies tresses (*Spiranthes praecox*), a low yellow St. Johnswort (*H. myrtifolium*), a yellow milkwort (*Polygala cymosa*), three lilaceous flowers (*Alectris farinosa*, *Tofieldia racemosa* and *Zygadenus*): a low trailing oak, a gentian (*Sabbatia lanceolata*) no end of ground pine (*Lycopodium carolinianum*), a blue *Lobelia* like our *L. Kalmii* (*L. Nuttallii*) a snowy white rein orchis (*Habenaria nivea*). The smaller *Calopogon* almost past. A small *Xyris* (*X. arenicola*), saw palmetto common. *Sarracenia minor* common. *Selaginella*. *Gratiola aurea* in bloom. A great big *Pogonia* (*P. divaricata*) magnificent at the edge of a cypress pond. Very small *Hypericum* (*H. mutilum*) in a wet dried up swampy area. Big yellow primrose (*Ludwigia virgata*) a little lower the conspicuous *Sabbatia campanulata* or the *Pentstemon* (*P. digitalis*). In a wet pasture are some immense *Sarracenia* trumpets. *Polygala lutea* yet in bloom."

Some of the species of the edge of cypress ponds, cypress bays, hammocks, etc. such as *Pyrus arbutifolia*, *Pinckneya pubens*, *Magnolia virginiana* and *Viburnum nudum* also occur in the moist pine barrens. The moist pine barrens have the most numerous species of any habitat of the swamp or mainland. We secured 5 trees, 34 shrubs, 3 vines, 25 grasses, sedges and rushes, and 112 herbs. The principal groups of shrubs are St. John's-worts, (8 species) and heaths (14 species). There are numerous grasses, sedges and rushes in the moist pine barrens and our list is weak compared to the actual number of species. Among the herbs are the lilies (8 species), orchids (10 species), milkworts (9 species), meadow beauties (7 species), gentians (6 species) and composites.

The moist pine barrens are not only rich in species but very showy and beautiful to the eye. Some have large individual flowers, others large inflorescences. Whites, yellows, oranges, pinks, and other colors are much in evidence. One never tires of the bright varied colors.

The moist pine barren areas on the islands are more restricted and in general we found greater profusion of flowers and individuals of a species and greater number of species in the pine barrens on the eastern edge of the swamp than on its islands. The list of the species we recorded is:

TREES:

1 <i>Pinus caribaea</i> Morelot	"Slash Pine"
<i>Pinus r. serotina</i> (Michx.) Loud.	Black Pine
<i>Pinus palustris</i> Mill. 3	"Long leaf Pine," Yellow Pine
4 <i>Persca pubescens</i> (Pursh.) Sarg.	"Sweet Bay," Red Bay, Swamp Bay

1 *Nyssa s. biflora* (Walt.) Sarg.

SHRUBS:

1 *Serenoa serrulata* (Michx.) Hook. 10

3 *Myrica cerifera* L. 1

2 *Quercus pumila* Walt. 2

1 *Phoradendron flavescens* (Pursh.) Nutt.

4 *Pyrus arbutifolia* (L.) L.f. 2

Rubus sp. 1

2 *Cyrilla racemiflora* L.

2 *Ilex glabra* (L.) Gray 4

1 *Ilex lucida* (Ait.) T. & G.

3 *Ilex myrtifolia* Walt.

1 *Ascyrum stans* Michx. 1

2 *Ascyrum pumilum* Michx.

6 *Ascyrum tetrapetalum* (Lam.) Vail 1

1 *Hypericum aspalathoides* Willd.

3 *Hypericum fasciculatum* Lam. 2

4 *Hypericum galioides* Lam.

11 *Hypericum myrtifolium* Lam. 3

6 *Hypericum opacum* T. & G. 1

2 *Clethra alnifolia* L.

2 *Rhododendron viscosum* (L.) Torr.

4 *Kalmia hirsuta* Walt.

4 *Leucothoe racemosa* (L.) Gray

9 *Lyonia ligustrina* (L.) D. C.

1 *Lyonia ligustrina* (L.) D. C.

foliosiflora (Michx.) Fern.

3 *Lyonia ferruginea* (Walt.) Nutt. 2

1 *Lyonia nitida* (Bartr.) Fernald.

3 *Gaylussacia nana* (A. Gray) Small 2

10 *Gaylussacia tomentosa* (Pursh) Chapm. 1

1 *Vaccinium arboreum* Marsh.

8 *Vaccinium corymbosum* L.

10 *Vaccinium Myrsinites* L. 6

1 *Vaccinium virgatum* Ait.

1 *Styrax pulverulenta* Michx.

Osmanthus americanus (L.) B. & H. 1

"Black Gum," Water Tupelo

"Saw palmetto"

"Highbush Myrtle," "Myrtle"

"Oak runner," "Lowland Oak-runner"

"Mistletoe"

"Chokeberry," Chokeberry

"Blackberry"

"Titi," "Hardwood"

"Gallberry," Inkberry

"Sweet gallberry," "Lowland gallberry"

Myrtle-leaved Holly

St. Peter's-wort, "St. John's-wort"

Dwarf St. Peter's-wort, "St. John's-wort"

St. Peter's-wort, "St. John's-wort"

Short leaf "St. John's-wort"

Tall narrow-leaved "St. John's-wort"

Glossy "St. John's-wort"

"Low Pine"

Opaque-leaved "St. John's-wort"

"Lather leaf," "Chokeberry"

"Honeysuckle" Clammy Azalea

"Calico," Hairy Laurel

"Hurrah bush," Swamp

Leucothoe

Privet Andromeda

"Poor Grub," "Hardhead"

Evergreen "Hurrahbush," Shining Fetter bush

"Blue Huckleberry," Dwarf Huckleberry

"Highbush Blueberry," "Blue Huckleberry"

"Farkleberry," Tree Huckleberry

"He Huckleberry," "Highbush Huckleberry"

"Huckleberry"

Southern Black Huckleberry

Powdery Storax

"Laurel," "Evergreen"

VINES:

- 1 *Vitis Baileyana* Munson
Smilax Walteri Pursh.
 1 *Cuscuta compacta* Juss. 2

Bailey's Grape
 "Red Bamboo"
 Compact-flowered "Love Vine"

GRASSES, SEDGES, RUSHES, ETC.:

- Arundinaria tecta* (Walt.) Muhl. 1
Panicum hemitomum Schultes 1
 1 *Panicum lancearium* Trin.
Ctenium aromaticum (Walt.) Hitchc.
Andropogon
Sorghastrum nutans (L.) Nash
 2 *Dulichium arundinaceum* (L.) Britt.
 2 *Rynchospora axillaris* (Lam.) Britt.
 1 *Rynchospora Baldwinii* Gray
 2 *Rynchospora corniculata* (Lam.) Gray
 1 *Rynchospora fascicularis* (Michx.) Vahl.
 1 *Rynchospora filifolia* Torr.
 2 *Rynchospora microcarpa* Britt.
 1 *Fuirena scirpoidea* Michx.
 1 *Cyperus pseudovegetus* Steud.
Cyperus cylindricus (Ell.) Britt.
 1 *Eleocharis Baldwinii* (Torr.) Chapm.
 1 *Eleocharis tuberculosa* (Michx.) R. & S.
 1 *Dichromena colorata* (L.) Hitchc.
 2 *Dichromena latifolia* Baldw.
 1 *Carex stricta* Michx. var. *brevis* Bailey
 2 *Carex verrucosa* Muhl.
 2 *Juncus aristulatus* Michx.
 1 *Juncus polycephalus* Michx.
 4 *Juncus scirpoides* Lam.

HERBS:

- Sphagnum*
Lycopodium carolinianum L. 1
 2 *Lycopodium alopecuroides* L. 1
Woodwardia virginica (L.) Sm.
 1 *Mayaca Aubletii* Michx.
 6 *Eriocaulon decangulare* L. 2
 1 *Lachnocaulon anceps* (Walt.) Morong.
 1 *Syngonanthus flavidulus* (Michx.) Ruhl.
 1 *Xyris brevifolia* Michx.
 1 *Xyris caroliniana* Walt.
 1 *Xyris arenicola* Small 5
 1 *Lachnanthes tinctoria* (Walt.) Ell.
 2 *Alectris aurea* Walt.
 2 *Alectris farinosa* L. 1
 4 *Tofieldia racemosa* (Walt.) B. S. P.
Schoenolirion albiflorum (Raf.)
 3 *Amianthium muscaetoxicum* (Walt.) A. Gray
 3 *Chamaelirium luteum* (L.) A. Gray
 2 *Lilium Catesbaei* Walt. 1
 1 *Sisyrinchium* sp.

Carolina Club Moss
 "Rabbit's tail," "Buckhorn"
 "Swamp Fern"
 Mayaca
 "Lowland button grass"
 "Highland button grass"
 "Highland Buttongrass"
 "Highland Hardhead"
 "Hardhead"
 "Highland Hardhead"
 Red Root
 Golden Star Grass
 "Star Grass"
 Viscid Tofieldia
 Fly Poison
 "Tiger tail"
 Southern Red Lily
 Blue-eyed Grass



FIG. 61. Meadow beauty (*Rhexia*). Prospect Church, Folkston, Ga. Aug. 15, 1922.

FIG. 62. Snowy orchis (*Habenaria nivea*). Wet pine barrens, about 4 miles southeast of Chesser's Island, Ga. July 9, 1922.

FIG. 63. Shortleaf milkwort (*Polygala brevifolia*). Pine barrens about 4 miles northeast of Chesser Island, Ga. July 15, 1922.

FIG. 64. Marsh pink (*Sabbatia*). Wet pine barrens about 4 miles southeast of Chesser's Island, Ga. July 9, 1922.

MOIST PINE BARRENS. SOME CHARACTERISTIC PLANTS

- | | |
|--|---------------------------|
| 3 <i>Burmannia biflora</i> L. | Two-flowered Burmannia |
| 5 <i>Pogonia dizaricata</i> (L.) R. Br. 2 | Spreading Pogonia |
| <i>Pogonia ophioglossoides</i> (L.) Ker. 1 | Rose Pogonia |
| 3 <i>Habenaria conspicua</i> Nash 1 | |
| 7 <i>Habenaria ciliaris</i> (L.) R. Br. 1 | Yellow fringed Orchis |
| 7 <i>Habenaria cristata</i> (Michx.) R. Br. 3 | Crested Yellow Orchis |
| 1 <i>Habenaria integra</i> (Nutt.) Spreng. 1 | Southern Yellow Orchis |
| 5 <i>Habenaria nivea</i> (Nutt.) Spreng. 2 | Snowy Orchis |
| 4 <i>Spiranthes praecox</i> (Walt.) Wats. & Coult. 3 | Early Ladies Tresses |
| <i>Spiranthes xyridifolia</i> (Small) 1 | |
| 10 <i>Calopogon pulchellus</i> Sw. R. Br. 4 | Grass Pink |
| 3 <i>Sarracenia psittacina</i> Michx. | "Trumpets," "Flycatcher" |
| 1 <i>Sarracenia minor</i> Walt. 2 | "Trumpets," "Flycatcher" |
| 1 <i>Drosera brevifolia</i> Pursh. | "Firegrass" |
| 1 <i>Drosera capillaris</i> Poir. | "Firegrass" |
| 4 <i>Crotalaria rotundifolia</i> (Walt.) Poir. | Round-leaf Rattle Pod |
| 3 <i>Tephrosia spicata</i> (Walt.) T. & G. | Hairy Devil's Shoe String |
| 4 <i>Linum floridanum</i> (Planch.) Trel. | Flax |
| 4 <i>Polygala setacea</i> Michx. 2 | |
| 2 <i>Polygala grandiflora</i> Walt. | Largeflowered Milkwort |
| 5 <i>Polygala lutea</i> L. 4 | "Love Root," "Candy Root" |
| 4 <i>Polygala cruciata</i> L. 1 | Cross leaf Milkwort |
| 1 <i>Polygala nana</i> (Michx.) D. C. | "Love-root" |
| 3 <i>Polygala cymosa</i> Walt. | Pine barren Pond Milkwort |
| 3 <i>Polygala ramosa</i> Ell. 3 | Low-branched Milkwort |
| 2 <i>Polygala mariana</i> Mill. 2 | Maryland Milkwort |
| 1 <i>Polygala brevifolia</i> Nutt. 1 | Shortleaf Milkwort |
| 1 <i>Hypericum mutilum</i> L. 1 | Dwarf "St. John's-wort" |
| 1 <i>Lechea Torreyi</i> Leggett | Torrey's Lechea |
| 4 <i>Viola rittata</i> Greene 1 | "Violet" |
| 2 <i>Rhexia floridana</i> Nash | Florida Meadow Beauty |
| 3 <i>Rhexia mariana</i> L. | Maryland Meadow Beauty |
| 2 <i>Rhexia glabella</i> Michx. 1 | Deer Grass |
| 2 <i>Rhexia lutea</i> Walt. | Yellow Meadow Beauty |
| 1 <i>Rhexia virginica</i> L. <i>stricta</i> (Pursh.) | Swamp Meadow Beauty |
| 1 <i>Rhexia virginica</i> L. | Meadow Beauty, Deer Grass |
| 5 <i>Rhexia ciliosa</i> Michx. | Fringed Meadow Beauty, |
| | "Deerweed" |
| 2 <i>Ludwigia linifolia</i> Poir | Flax-seed Ludwigia |
| 4 <i>Ludwigia suffruticosa</i> Walt. 1 | Ludwigia |
| 1 <i>Ludwigia linearis</i> Walt. | Linear-leaved Ludwigia |
| 3 <i>Proserpinaca pectinata</i> Lam. | Cut-leaved Mermaidweed |
| 1 <i>Centella asiatica</i> (L.) Urban | Asiatic Pennywort |
| 1 <i>Hydrocotyle umbellata</i> L. | Water Pennywort |
| 2 <i>Eryngium synchaetum</i> (Gray) Rose | Eryngo |
| 3 <i>Oxypolis filiformis</i> (Walt.) Britt. | False Dropwort |
| 1 <i>Cynoctonum sessilifolium</i> (Walt.) Gmel. 1 | Sessile-leaf Miterwort |
| 4 <i>Sabbatia gentianoides</i> Ell. 2 | Gentian-like Sabbatia |
| 7 <i>Sabbatia lanceolata</i> (Walt.) T. & G. 1 | Lance-leaf Sabbatia |
| 8 <i>Sabbatia campanulata</i> (L.) Britt. | Sleuder Marsh Pink |

- | | |
|---|--|
| 8 <i>Sabbatia decandra</i> (Walt.) Harper 1 | |
| 2 <i>Sabbatia macrophylla</i> Hook. 1 | Large-leaf <i>Sabbatia</i> |
| 4 <i>Anantherix connivens</i> (Baldw.) Gray 1 | Green Milkweed |
| 1 <i>Podostigma pedicillata</i> (Walt.) Vail | Yellow-green Milkweed |
| 1 <i>Asclepias lanceolata</i> Walt. | Few-flowered Milkweed |
| 1 <i>Asclepias viridula</i> Chapm. | |
| <i>Houstonia rotundifolia</i> Michx. | |
| 2 <i>Physostegia denticulata</i> (Ait.) Britt. | Few-flowered Lion's Heart |
| 1 <i>Pycnanthemum hyssopifolium</i> (Benth.) Gray | Hyssop-leaf Mountain Mint |
| 4 <i>Pycnanthemum nudum</i> Nutt. | Bare-stemmed Horse Mint |
| 2 <i>Hyptis radiata</i> Willd. | Swamp Basil |
| 1 <i>Pentstemon laevigatus</i> Ait. <i>digitalis</i> (Sweet) Gray | Foxglove, Beard-tongue |
| 1 <i>Scoparia dulcis</i> L. | |
| 1 <i>Gratiola aurea</i> Muhl. 1 | Golden Hedge Hyssop |
| 1 <i>Azelia cassioides</i> (Walt.) Gmel. | Thin-leaf <i>Azelia</i> |
| 2 <i>Buchnera elongata</i> Sw. | Southern Blue Hearts |
| 2 <i>Utricularia cornuta</i> Michx. | Horned Bladderwort |
| 1 <i>Pinguicula pumila</i> Michx. | Dwarf Butterwort |
| 4 <i>Pinguicula elatior</i> Michx. | Butterwort |
| 3 <i>Diodia virginiana</i> L. | Larger Buttonweed, Button Flower |
| 3 <i>Lobelia paludosa</i> Nutt. | Swamp Lobelia |
| 1 <i>Lobelia Nuttallii</i> Roem. & Schult. 1 | Nuttall's Lobelia |
| 2 <i>Eupatorium recurvans</i> Small | Thoroughwort |
| 2 <i>Eupatorium rotundifolium</i> L. | False Hoarhound, Wild Hoarhound |
| 1 <i>Eupatorium coelestinum</i> L. | Mist Flower |
| 1 <i>Trilisa odoratissima</i> (Walt.) Cass. | "Deer's Tongue," Dog's Tongue |
| 1 <i>Solidago rigida</i> L. | Hard-leaved Goldenrod |
| 2 <i>Aster squarrosus</i> Walt. | Aster |
| 6 <i>Aster reticulatus</i> Pursh. | White-topped Aster |
| 3 <i>Aster dumosus</i> L. <i>subulacfolius</i> T. & G. | Small-leaf Bushy Aster |
| 1 <i>Aster patens</i> Ait. | Late Purple Aster, Spreading Aster |
| 1 <i>Erigeron ramosus</i> (Walt.) B. S. P. | Daisy Fleabane |
| 2 <i>Erigeron vernus</i> (L.) T. & G. | Early Fleabane |
| 1 <i>Sericocarpus bifolius</i> (Walt.) Porter | Rough White-topped Aster |
| 2 <i>Pluchea foetida</i> (L.) B. S. P. | Viscid Marsh Fleabane |
| 2 <i>Helianthus angustifolius</i> L. | Narrow-leaf Sunflower, Swamp Sunflower |
| <i>Bidens coronata</i> (L.) Fisch. | Southern Tickweed, Sunflower |
| 3 <i>Bidens coronata</i> L. <i>leptophylla</i> (Nutt.) Mohr. | Pine-barrens Coreopsis |
| 7 <i>Marshallia graminifolia</i> (Walt.) Small. | Narrow-leaf Marshallia |
| 2 <i>Baldwinia uniflora</i> Nutt. | Nuttall's Sneezeweed |
| 1 <i>Helenium nudiflorum</i> Nutt. | Purple-head Sneezeweed |
| 3 <i>Erechtites hieracifolia</i> (L.) Raf. | Firewood Pilewort |
| 1 <i>Pterocaulon undulatum</i> (Walt.) | "Blackroot" |
| 2 <i>Liatris laevigata</i> Nutt. | "Indian Turnip," Blazing Star" |

MOIST PINE BARRENS

(Edge of Islands)

When we were studying snakes of the swamp in 1912 we established a "Transition zone between the Islands and the Cypress Bay." In 1921 and 1922 we gathered many plants with data "edge of island." Normally one might term these moist pine barrens. In general they are, but not so characteristic as some outside the swamp. The following species of woody plants serve to show the point: *Quercus nigra*, *Quercus laurifolia*, *Quercus phellos*, *Quercus Chapmani*, *Sassafras officinale*, *Magnolia virginiana*, *Litsea geniculata*, *Itea virginica*, *Rhus copallina*, *Ilex Cassine*, *Gordonia Lasianthus*, *Vaccinium caesium*, *Smilax laurifolia*, etc. It is therefore apparent we have moist pine barrens on the islands diluted with hammock and cypress bay elements.

SAVANNAS

Ecologic Synonymy (1737-1860)

1682. Savannas or Grassy planes of several Magnitudes clear of trees. . . . (S. Wilson, 1682, Report 1836, p. 27.)
1737. ". . . pleasing and delightful *Savannas* or *Meddows*. . . ." (John Brickell 1737; Report 1910, p. 10.) "Here are in several Places large *Savannas*, beautiful to behold which at certain Seasons appear at a distance like so many Pleasure Gardens" (Brickell, p. 11.)
1741. "Savannah Land. This is extremely proper for husbandry; a strong grass grows naturally upon it. . . . This runs generally upon a level, and sometimes into large parcels of five hundred acres, and upwards; is free from wood, and is always well supplied with springs of water." (An Impartial Inquiry . . . Georgia 1741. Colls. Ga. Hist. Soc., 1840, 1: 159). "; and the 4th, savannahs, where on grow canes and grass, where the cattle feed." (p. 188.)
1761. There arise in many places fine Savannahs or wide extended plains, which do not produce any trees: these are a kind of natural Lawns, and some of them as beautiful as those made by Art." (Descript. S. C., 1761, Reprint 1836, p. 201.)
1769. "*savannahs* and ponds which are interspersed generally in the pinelands. . . ." (Bartram, 1769).
1779. "The savannas and open plains are of a deep fat and greasy mould, which when drained and freshened, become also fruitful and excellent parts of a plantation. (Hewatt, 1779, Reprint 1836, p. 76.)
1784. "savannahs" "wide savannahs or glades" (Smyth, 1784, 1: 151, 164).
1788. "the 'savannahs,' very low tracts subject to overflow, where only canes, rush, and sedge come up. but trees and bush very rarely." (Schoepf, 1788, Reprint 1911, 2: 154.)

1791. "savannas and ponds," "green savannas" "grassy savannas" "expansive green meadows or savannas," "savanna pinelands" (—Wm. Bartram, 1791).
1802. "Natural meadows, called savannahs, are often seen in this part of the state; some of which cover an area of fifty acres. They are destitute of trees or bushes: producing little more, than a few species of coarse grass, and wild herbaceous flowers." (Drayton, 1802: 8).
1817. "What we call *savannas*, in this country, correspond pretty well with the *prairies* of the West; but are seldom so extensive. The soil in them is clayey,—while the Pine barren is *sandy* (Wm. Baldwin, 1817, p. 217).
1821. "*Prairie or meadow lands* are margined toward the sea by immense quantities of oyster shells, from which, advancing into the country, are often found extensive plains of grass and cane brakes, on which vast herds of cattle were formerly raised; they are also well adapted to rice and sugar." (Forbes, 1821: 147-148).
1821. "*fresh marshes*" (Elliott, 1821, 1: 57); "ponds and savannahs of the pine barrens" (p. 47.)
1822. "A large savannah or grassy pond. . . ." (McCall, 1868: 42.)
1823. "The *pine land savannas* have a very black and rich appearance, but notwithstanding they contain only white sands, though the clay beneath is perhaps nearer the surface; they are merely sinks or drains to the higher grounds, their low situation preventing the growth of pines." (Vignoles, 1823: 89.) "The *hammock savannas* have a more fertile soil; fossil broken shells, are embedded in the mould which is rich and black, and of some depth: the clay is often within a foot of the surface of the earth. The great Alachua savanna, the savannas on borders of Haw Creek and it's prongs, and the large savannas west of and parallel to Indian river, are of this description; deep ditching and high banking will be however requisite, to guard them from the inundation their low position naturally exposes them to. Pasturage of the most luxuriant kind is afforded by these savannas, which are valuable features in the territory." (p. 90).
1827. "Savannas are no more than natural reservoirs of water like the swamps; except that they are covered with grass and herbs instead of trees and vines; they are usually founded on clay or marle, but sometime only on a hard sand. They are frequently extensive, and form excellent grazing lands." (Williams, 1827: 53.)
1834. "Cypress glades, *savannahs*, ponds and bays." (Crawford and Couper, 1834: 3).
1836. "Savannas or Prairies" (Potter, 1836); "Adjacent to these lands you find extensive savannas or prairies covered with tall grass, roaming

through which you may count hundreds and indeed thousands of cattle; this will always render Florida a land of graziers and of pastoral wealth" (pp. 4, 5).

DISCUSSION

We have not discussed savannas or savannah lands in the swamp. According to these previous classifications of 100 years ago there were pineland, hammock and cypress savannas, thus our pine barrens, (moist and dry), hammocks (normal and bluff), and swamps (cypress, gum or bay) might have savannas. In the swamps, fern bogs or grass openings of the strands (bogs) between "prairies" and bays might be thought savannas when in pure patches of grasses, sedges, rushes or reeds. We might therefore have savannas or open meadows from the pond edge or even the prairies (or shallow marshes) to dry pine barrens or bluff hammocks. Often, however, we suspect that the savannas of past accounts accord best with moist pine barrens.

INTERMEDIATE PINE BARRENS

Ecologic Synonymy (1737-1860)

1765-6. "Pinelands" (John Bartram, 1765, 1766.)

1791. "level pine forests" (Wm. Bartram, 1791 : 218.)

1823. "the saw palmetto bushes—confined to a middling description of ground (pine lands). . . ." (Vignoles, 1823 : 87). (See dry pine barrens).

DISCUSSION

Harper (1906) suggests this term for the transition between dry and moist pine barrens and intimates that possibly in the country east of the Altamaha Grit, intermediate and moist pine barrens are doubtless the main groups. We have not attempted to distinguish this third class. Possibly what we have termed dry pine barrens may be Harper's intermediate pine barrens. Curiously enough, whenever we used the term in our journal notes, each of us had a different notion. One worker inclined toward moist (wet) pine barrens (island edges) and dry pine barrens and his vacillation was "dry or intermediate pine barrens." Another of us preferred to speak of "semi-dry pine barrens." Still another used the term "moist or intermediate pine barrens." This was sufficient to lead the authors to keep to two pine-barren habitats for the Okefinokee region.

DRY PINE BARRENS

Ecologic Synonymy (1737-1860)

1741. "Pine-barren. This is so called from the pines growing on it, with scarce any other sorts of timber; and the soil, being dry and sandy, will not produce grain like the other lands. However there is a grass upon it which feeds abundance of cattle. This being high is found a healthy

situation, and the houses are generally built upon it." (An Impartial Inquiry . . . Georgia 1741; Collections, Ga. Hist. Soc., 1840, 1: 158, 159, 188.)

1765-6. "pine lands" (John Bartram 1765: 6.)

1770. "The pine-land is by far of the greatest extent; near the sea, the soil is of a dry whitish sand, producing a great variety of shrubs, and a coarse kind of grass, that cattle are not fond of eating; though here and there is a little of a better kind, especially in the meadows called savannahs; it naturally bears two kinds of fruit, *viz* whortleberries, much like those of *England*; and chinquopin nuts a kind of dwarf chestnut, about the size of an acorn; . . . (G. Milligen, 1770, Reprint 1836, pp. 467, 468).

1775. "Pine land is much the most general, containing perhaps four-fifths of the country; the soil is a dry white sand, covered with pines: if there is any underwood it is very poor, only the whortleberry and chinkapin, which Dr. Mitchel calls the *heath* of America. This land is very poor, and will bear scarcely any thing but its spontaneous growth; in spots it contains a little grass, but of so bad and sour a nature, that cattle will not touch it unless half starved. The writer I just now mentioned has an observation on this pine-land, which deserves attention. 'These pines with which all our southern colonies are covered for one (385) hundred or one hundred and fifty miles from the seacoast, and in some all over them, are the most pernicious of all weeds; they not only destroy every thing upon the face of the earth, but the very land they grow upon; insomuch that nothing will grow among them, and hardly anything after then. It is a general observation, that the lands are not only barren on which they grow naturally, but if they happen to come up on other lands, they spoil them, and render them more or less barren. Having often examined what this could be owing to, I could not attribute it altogether to their large spreading roots, which spread all over the surface of the earth like a mat, and exhaust its substance, but chiefly to the strong acid juice of their leaves, which distills from them in the spring of the year, like oil of turpentine, and poisons both the earth and everything upon it; as it is well known that all acids are a poison to vegetables, and all alcalies a rich manure. But whatever may be the cause, the matter of fact is certain, that nothing will grow among pines in America; and M. du Hamel makes the same observation in France. The whole surface of the earth is covered with their acid leaves; they over-top and destroy everything; and if a little grass should happen to come up among them where they grow thin, it is so scarce, yellow, and sour, that to see any beast feed upon it, is a certain sign of the miserable poverty of a country, where they are reduced to the last extremity.

Yet these are the only pastures they have in many of our colonies: what is worse, these pernicious weeds are not to be extirpated; they have a wing to their seed, which disperses it everywhere with the wind, like thistles, and in two or three years forms a *pine thicket*, which nothing can pass through or live in. Thus the land becomes a perfect desert instead of a profitable pasture, in a few years after it is cleared. Corn upon such land looks as yellow as the turpentine with which it is fed, and grass will not grow.' There is a great deal of truth and good sense in this passage; but at the same time it is not strictly true, that nothing will grow *after* these pines, for it is well known that the planters get Indian corn and peas from these lands after they are cleared; and when they lie low enough to be flooded, rice. But the principal use they are put to is for indigo, in which they answer tolerably, but this is only because they have no better (387) that is dry; for indigo delights in dry, rich, deep, black mould. When you abuse their pine barrens, a Carolina planter will answer you by saying, that they do for their richest crop, indigo; which is very true, as I just observed; but they do for it only as poor sands in England do for the culture of wheat; the farmers sow it because they have no better, and get half crops, which is just the case with indigo on pine barrens." (An. Husbandry 1775, 1: 384, 387). " . . . the pine barren is the worst land of America, but to say that it is absolutely sterile, would be asserting an untruth; for no soil can be such in a climate that is very wet and very hot, since those two agents will everywhere make the worst of land produce something: this pine barren will, when cleared, produce indigo, Indian corn, and some other crops; but then it is not the proper soil for any one of them, and such as no person would move to from the worst of our colonies, in order to cultivate them. This seems to be the plain facts, when cleared from the (50) attendants which prejudice has given it." (2: 49, 50).

1779. "Where the pine-trees grow the ground is sandy and barren, and produces little except in rainy seasons" (Hewatt, 1779, Reprint 1836: 76.)
1784. " . . . on the inferior highland, of lofty pines, of a great height, mixed with scrubby oaks, . . ." (Smyth, 1784, 1: 93) "high lands or barrens . . ." "the pine barrens are only pine or fir-trees growing, scattered promiscuously, in a bed of loose-deep sand, which scarcely produces a single blade of verdure, and is excessively fatiguing and troublesome for either horses or men to travel through, every step therein sinking almost to the knee." (p. 203) "poor barren land" (2: 50); "the pine barren is the worst of all, this is an almost perfectly white sand, yet it bears the pine tree, and some other useful plants naturally yielding good profit in pitch, tar, and turpentine: when this species of land is cleared, for two or three years together it produces very tolerable crops of

Indian corn and pease, and when it lies low and is flooded it even answers well for rice; for this grain . . . must be under water more than half the time of its culture." (pp. 73, 74); "nothing can be more dreary, melancholy and uncomfortable than the almost perpetual solitary pines, . . ." (p. 100).

1788. "pine-forest" (Schoepf, 1788, 2: 102, 134); "dry pine-land or pine-barren" (p. 132), "the higher and more barren parts of this surface are occupied by the immense pine-forests, and called therefore "dry pine ridges" or "pine barrens" (pp. 153, 154). "barren, flat sandy pine forests" (p. 163).
1791. "high open pine forests" . . . (William Bartram, 1791: 19, 58, 303).
1797. "pine barren, with wire grass and saw palmetto, without reed or cane for horses, . . ." (Hawkins, 1797).
1799. "The upland . . . is pine forest" (Hawkins, 1799: 20.) "The uplands have yellow pine, with dwarf saw palmetto and wire grass. (pp. 20, 21).
1802. "These lands, generally produce extensive pine forests; known with us, by the name of *pine barrens*; because, of their unproductive nature. They are without any stones on their surface, for eighty miles or more, from the sea; rising by an almost imperceptible ascent to that distance; where the elevation is said to be near two hundred feet above the level of the ocean." (Drayton, 1802: 7) "high pine lands" (p. 32); "But all the high lands may be called healthy; and settlements made in the dry pine barrens, have been found advantageous in this respect, to many planters, whose wishes lead them to reside in the country throughout the year." (p. 27) "upland."
1817. "highland (pine barrens, etc.) (Baldwin, 1817: 59)"; But by far the greatest quantity of land along the sea board is low Pine barren, covered with *Pinus palustris* (long-leaved Pine), principally, *undergrowth*, *chamaerops serrulata*, or Saw Palmetto,—with some fine shrubs,—*Andromeda*, *Bejaria*, etc. This is the most sterile of all descriptions of land. . . . the Pine barren is sandy" (p. 217). "This elegant flowering shrub (*Bejaria racemosa*), in many places, constitutes almost the exclusive undergrowth, along with the Saw Palmetto . . . and contributes much to cheer the gloom of the solitary Pine barren. . . ." (p. 336).
1821. "pinelands" . . . (Forbes, 1821: 147). "dry pine barrens" (Elliott, 1821: 45); "sandy pine barrens" (p. 489); "dry sandy pine barrens" (p. 458).
1823. "The *elevated and undulating pine lands* are healthy and beautiful; the timber is taller, straighter and of a better quality than on the low grounds: . . . they abound with succulent herbage: the *saw palmetto*

- bushes are very rarely found in these high pine lands, they being confined to a middling description of ground not so low as to be liable to frequent inundations, nor high enough to foster a different species of undergrowth." (Vignoles, 1823: 87).
1827. "The pine barrens are composed, principally, of silicious sand, more or less mixed with calcareous and vegetable matter, . . . All the lands covered with pine timber, are by no means barren; on the contrary, some of the best uplands are wholly, or near all, covered with yellow pines. . . ." (Williams, 1827: 39).
1834. "elevated pine lands" (Crawford and Couper, 1834: 11).
- 1822-1842. "Woods, where the long leaved pine, sparsely distributed, towers up among the red and white palmetto" (McCall, 1868: 35); "pine ridges" (p. 36); "hills covered with long leaved pine, . . . pine barrens . . ." (p. 35); "pine land" (p. 193); "pine and palmetto country" (p. 381).
1836. "A large portion of the country north of 28 deg. is covered with pine forests, the trees are very tall, standing at a considerable distance apart, without underbrush, whilst the surface of the ground presents a rich carpet of verdant grass and choice flowers throughout most of the year." (Potter, 1836: 4); ". . . an open pine woods with very little undergrowth, and excepting the grass and clustered palmettos, on the right of the road, afforded them no shelter." (p. 108); "pine woods and palmettos" (p. 132); "open pine barren woods" (p. 172).
1836. "high and open pine land" (Cohen, 1836: 189); "open pine barren" (pp. 76, 164); "pine barren" (pp. 77, 93); "we found the only live *gopher* or land tortoise . . . although their holes, on the high dry sand hills, were seen in hundreds." (p. 212); "pine land" (p. 190).
1848. "pine-barren" (Sprague, 1848: 281).
1860. "pine barrens," "pine woods," "sandy pine barrens" "dry pine woods" (Darby, 1860).

DISCUSSION

Unlike the moist pine barrens, oaks enter quite strongly. In fact some areas have few pines and many oaks. These sometimes are designated "oak ridges." Six species of oak, the persimmon and long leaved pine—eight in all—make up the tree list. Heaths, papaws, oak runners, myricas, saw palmettoes and others make up the bulk of the shrubs. Wire grass is the grass of the dry pine barrens. Legumes, spurges and composites make the bulk of the herbs. In all 116 species were recorded, of which 8 were trees, 26 shrubs, 3 vines, 15 grasses, sedges and rushes, and 64 herbs. Many of the plants are of dwarf species (four with specific name *pumila* and two with *nana*), of small or wire-like leaves (*microphyllus*, *angustifolia*, *filifolia*, *graminea*, *filamentosa*, *junceae*, *tenuifolium*, *lanceolata*, *graminifolia*), (See Harper's, 1906, note)



FIG. 65. Floyd's Island. Long leaf pine, myrtle (*Myrica*), saw-palmetto, calico bush (*Kalmia hirsuta*), June 13, 1921.

FIG. 66. Dry pine barrens, 2 miles east of Chesser's Island. Bare foreground, the site of a Florida night hawk's nest. Oak runners (*Quercus*), dwarf myrtle (*Myrica pumila*), saw palmetto, etc. June 15, 1922.

DRY PINE BARRENS

and of perennial habit (*perennis*) and of pubescent foliage (two each of *tomentosa* and *canescens*). The vines are as scarce as in the moist pine barrens. The flowers are not as conspicuous as those of the moist pine barren species.

The best of the dry pine barrens around the swamp have been lumbered. Many of the pine trees are fire scarred. In 1921, Mr. R. A. Chesser showed me on Chesser Island a large tract of pine land with a few dead boles standing, and more down. It was a devastated area and the following year his son showed me the effects of the same storm on the mainland. This area of dead "lighter" trees had saw palmetto, dwarf oak, dwarf myrica, gallberry, wild oats (*Sorghastrum secundum*) and "huckleberries" (*Vaccinium Myrsinites*). Several of the older writers recount how desolate cyclones make the open pine forests. These storms sweep through a pine forest, a bolt of lightning sometimes starting fires in the grass and underbrush. If not concomitant with the storm, usually fire later enters such a tract.

Dr. Baldwin (Sept. 24, 1813) vividly describes such a tornado. Of the plants he writes (pp. 110, 111) "In returning I had to pass through a low, rich *Hammock*, consisting principally of Live Oak, but mixed with other Oaks, and the great *Magnolia grandiflora*. Thousands of these were all prostrate, blocking up the way; and it was with the greatest difficulty and hazard I could penetrate at all, . . . being frequently under the necessity of dismounting from my horse to cut loose from Grape vines, Green briars, etc. Nearly the whole forest was also under water; . . . Passing out of this into Pine Barren (consisting exclusively of *Pinus palustris*) every tree, of any importance, was prostrate!"

TREES:

1 <i>Pinus palustris</i> Mill. 5	"Long leaf Pine"
1 <i>Quercus alba</i> L. 1	"White Oak"
3 <i>Quercus catesbaei</i> Michx.	"Turkey Oak," Black Jack
5 <i>Quercus Chapmani</i> Sarg. 1	"Post Oak"
2 <i>Quercus myrtifolia</i> Willd.	"Scrub Oak," "Holy Acorns"
4 <i>Quercus cinerea</i> Michx.	"Turkey Oak," High Willow Oak
4 <i>Quercus virginiana</i> Mill. 1	"Live Oak"
2 <i>Quercus minima</i> (Sarg.) Small	"Ground Oak"
<i>Diospyros virginiana</i> L.	"Persimmon"

SHRUBS:

2 <i>Serenoa serrulata</i> (Michx.) Hook. 3	"Saw Palmetto"
5 <i>Myrica pumila</i> (Michx.) Small 2	"Highland myrtle"
1 <i>Myrica cerifera</i> L.	"Highbush myrtle"
1 <i>Castanea pumila</i> (L.) Mill. 2	"Chinquapin"
3 <i>Quercus pumila</i> Walt. 3	"Oak runner," "Lowland oak runner"
2 <i>Quercus phellos</i> L.	"Willow oak"
4 <i>Asimina pygmaea</i> (Bart.) Gray	"Pop-Haw," "Possum Haw"
1 <i>Asimina angustifolia</i> Gray var	"Pop Haw," "Possum Haw"

- 4 *Asimina speciosa* Nash 3
 3 *Itea virginica* L.
 2 *Chrysobalanus oblongifolius* Michx.
 2 *Amorpha herbacea* Walt.
 Cyrilla racemiflora L. 1
 Rhus copallina L.
 Ilex glabra (L.) Gray 4
 3 *Ceanothus microphyllus* Michx.
 Ascyrum hypericoides L.
 1 *Hypericum galioides* Lam.
 4 *Bejaria racemosa* Vent. 1
 5 *Kalmia hirsuta* Walt. 3
 5 *Lyonia ferruginea* (Walt.) Nutt.
 1 *Lyonia ligustrina* (L.) D. C.
 9 *Gaylussacia dumosa* (Andr.) T. & G. 4
 5 *Gaylussacia nana* (A. Gray) Small
 9 *Vaccinium caesium* Greene 4
 9 *Vaccinium Myrsinites* Lam. 7

VINES:

- 1 *Smilax beyrichii* Kunth.
 1 *Smilax glauca* Walt.
 2 *Smilax* sp.

GRASSES, SEDGES, RUSHES, ETC.:

- Aristida* sp.
Aristida stricta Michx. 3
Sorghastrum secundum (Ell.) Nash 1
 2 *Cyperus retrofractus* (L.) Torr.
 2 *Rynchospora Baldwinii* Gray
 1 *Rynchospora filifolia* Torr.
 2 *Rynchospora plumosa* Ell.
 2 *Carex verrucosa* Muhl.
 Scleria glabra (Chapm.) Britt.
 3 *Juncus aristulatus* Michx.
 1 *Juncus scirpoides* Lam.
 1 *Juncus* sp.

HERBS:

- Pteridium latiusculum* (Desv.) Max.
 1 *Cuthbertia graminea* Small
 1 *Syngonanthus flavidulus* (Michx.) Ruhl.
 2 *Xyris brevifolia* Michx.
 4 *Xyris arenicola* Small 4
 1 *Yucca filamentosa* L.

- "Stinking bush," "Pop Haw,"
 "Possum Haw"
 "Indian Reed," "Virginian
 Willow"
 "Ground Oak," "Deer Plum"
 "Titi," "Hardwood"
 "Shining Sumac," "Shumac"
 "Gallberry," "Evergreen Winter-
 berry"
 "Small-leaf New Jersey Tea"
 "Highland," "St. John's-wort"
 "Bed straw," "St. John's-wort"
 "Honeysuckle"
 "Calico-bush," "Wicky"
 "Poor Grub," "Hardhead"
 Privet Andromeda
 "Rough Coats," "Bush Huckle-
 berry"
 "Dwarf Huckleberry," "Blue
 Huckleberry"
 "Gooseberry," "Squaw Huckle-
 berry"
 "Black low bush Huckleberry"

- "Narrow-leaved panic Grass"
 "Broad-leaved Panic Grass"

- "Wire grass"
 "Wild Oats"

- "Highland Fern"
 "Roseate Spiderwort"
 "Highland Button grass"
 "Highland Hardhead"
 "Highland Hardhead"
 "Bear Grass"

- | | |
|--|---------------------------------|
| 4 <i>Chamaelirium luteum</i> (L.) A. Gray | "Tiger tail" |
| <i>Hypoxis juncea</i> Smith 2 | "Yellow eyed Grass" |
| 2 <i>Eriogonum tomentosum</i> Michx. | |
| 1 <i>Galactia Elliottii</i> Nutt. | Elliott's Milk Pea |
| 1 <i>Galactia regularis</i> (L.) B. S. P. | Milk Pea |
| 2 <i>Galactia volubilis</i> (L.) Britton | Downy Milk Pea |
| 1 <i>Desmodium tenuifolium</i> T. & G. | Narrow-leaf Tick Trefoil |
| 1 <i>Desmodium canescens</i> (L.) D. C. | Hoary Tick Trefoil |
| 4 <i>Psoralea canescens</i> Michx. | |
| 3 <i>Indigofera caroliniana</i> Walt. | Wild Indigo |
| <i>Stylosanthes biflora</i> (L.) B. S. P. | Pencil Flower |
| 2 <i>Lupinus villosus</i> Willd. | Hairy Lupine |
| 5 <i>Crotalaria sagittalis</i> L. | Round-leaf Rattle Pod |
| 1 <i>Tephrosia hispidula</i> (Michx.) Pers. | Hispidulous Goat's Rue |
| 6 <i>Baptisia lanceolata</i> Walt. 1 | "Gopher Grass" "Buckeye" |
| 3 <i>Desmanthus</i> sp. | Mimosa |
| 1 <i>Linum floridanum</i> (Planch.) Trel. | Flax |
| 1 <i>Polygala incarnata</i> L. | Nude stemmed Milkwort |
| 2 <i>Polygala grandiflora</i> Walt. | Large flowered Milkwort |
| 1 <i>Polygala nana</i> (Michx.) D. C. | "Love root" |
| 2 <i>Stillingia sylvatica</i> L. 3 | "Queen's Delight" |
| 1 <i>Stillingia spathulata</i> (Muell.) Small | "Queen's Delight" |
| 1 <i>Tragia linearifolia</i> Ell. | Linear leaf Tragia |
| 2 <i>Jatropha stimulosa</i> Michx. | Spurge nettle |
| 1 <i>Euphorbia</i> sp. | Spurge |
| 2 <i>Euphorbia corollata</i> L. | Flowering Spurge |
| 4 <i>Hibiscus aculeatus</i> Walt. | Rough Rose Mallow |
| 1 <i>Sida rhombifolia</i> L. | Prickly Sida Spiny Sida |
| 2 <i>Pavonia hastata</i> Cav. | |
| <i>Piriqueta caroliniana</i> (Walt.) Urban. | Filiform Meadow Beauty |
| <i>Rhexia filiformis</i> Small | Flax-seed Ludvigia |
| <i>Ludvigia linifolia</i> Poir. 1 | Slender-stemmed Ludvigia |
| 4 <i>Ludvigia virgata</i> Michx. 1 | Linear-leaf Milkweed |
| 3 <i>Asclepias cinerea</i> Walt. 5 | Rabbit's Milkweed |
| 1 <i>Asclepias humistrata</i> Walt. | Thin-leaf Milkweed |
| 1 <i>Asclepias perennis</i> Walt. | Breweria |
| 1 <i>Breweria trichosanthos</i> Michx. 1 | Rough Hedge Hyssop |
| 5 <i>Gratiola hispida</i> (Benth.) | Thin-leaf Afzelia |
| 1 <i>Afzelia cassioides</i> (Walt.) Gmel. | False Foxglove |
| <i>Auricularia</i> sp. | Night-flowering Ruellia |
| <i>Ruellia noctiflora</i> (Nees) Gray | Hairy Bedstraw, Hairy Ladies' |
| 2 <i>Galium pilosum</i> Ait. <i>punctulosum</i> Michx. T. & G. | Bedstraw |
| 2 <i>Vernonia angustifolia</i> Michx. | Narrow-leaf Vernonia |
| 2 <i>Elephantopus tomentosus</i> L. | Hoary Elephant's-foot |
| <i>Eupatorium recurvans</i> Small | Torrey's Thoroughwort |
| 4 <i>Chrysopsis graminifolia</i> (Michx.) Nutt. | "Goat grass" Silver-leaf Golden |
| | Aster |
| 4 <i>Trilisa odoratissima</i> (Walt.) Cass | "Deer's Tongue" Vanilla Plant |
| 2 <i>Silphium compositum</i> Michx. | Rosin-weed |
| 3 <i>Berlandiera pumila</i> (Michx.) Nutt. | Downy Berlandiera |

- | | |
|--|------------------------------|
| 4 <i>Rudbeckia hirta</i> L. | Cone-flower |
| <i>Krigia virginica</i> (L.) Willd. | "Rabbit Grass" Dwarf |
| | Dandelion |
| <i>Hieracium</i> sp. | Hawkweed |
| 2 <i>Sericocarpus bifolius</i> (Walt.) Porter | Mouse Ears, Rough White- |
| | topped Aster |
| 5 <i>Aster squarrosus</i> (Walt.) | Aster |
| <i>Lacinaria laevigata</i> (Nutt.) Small | "Indian Turnip" Blazing Star |
| 3 <i>Pterocaulon undulatum</i> (Walt.) 1 | "Black-root" |
| 1 <i>Gaillardia lanceolata</i> Michx. | Sweet Gaillardia, Lance-leaf |
| | Gaillardia |
| 4 <i>Carphephorus corymbosus</i> (Nutt.) T. & G. | |

SAND SCRUB

Ecologic Synonymy (1737-1860)

1802. "barren sandy land" (Drayton, 1802).
1817. "There is, as yet, but little naked sandy desert; . . . (Wm. Baldwin, 1817: 217).
1821. "*Sand hills* which run parallel with the sea, afford little more than small shrubbery, saw palmetto, wire grass, and prickly pears, without any other use than as beacons on a low coast to mariners and as presenting a variety of romantic scenery" . . . (Forbes, 1821: 148).
1823. "The *scrub lands* . . . : they vary but very little in their general appearance wherever found, and are of too forbidding an aspect to lead the farmer to expect from them any advantage, except perhaps that of raising hogs, for which they are peculiarly well adapted, from the abundance of acorns on the dwarf oaks, and a number of curious roots to the sandy plants"—(Vignoles, 1823: 89).
1827. "barren hills"—(Williams, 1827: 39).
- 1822-1842. "patches of knotty 'black-jacks'" (McCall, 1868: 36); "low scrub" (p. 40); "clearing their way through the interlocked branches of the tough black-jacks," (p. 42). "Any one who has ridden at top speed through the black jacks of Florida will comprehend the sense in which I use the word. The result is a pair of lower limbs, black, blue and red all over. Nothing but buckskin will stand it." (p. 42); "through the plain clad with *black-jacks*, as the low-scrub-oaks are called . . ." (p. 54).
1836. "scrub" (Cohen, 1836: 84, 93, 147, 161).
1848. "scrub" (Sprague, 1848: 280); "Communicating with the wet and dry hammocks, are portions of land called *scrubs*, consisting of a stunted growth of oak and pine, from two to ten feet in height, with an undergrowth of bushes and vines. To these the Indians resorted when closely pursued, but the barrenness of the land and absence of water deterred them from remaining longer than to elude their pursuers." (p. 282).

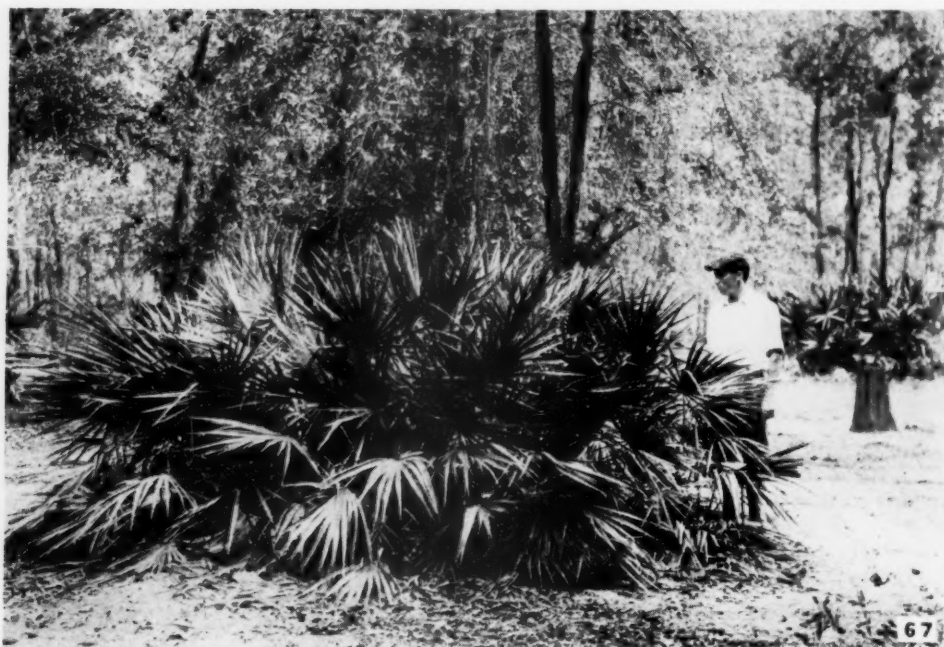


FIG. 67. A clump of saw palmetto (*Serenoa serrulata*) six feet high in the oak grove at Fence pond, near Chesser's Island. July 9, 1922.

FIG. 68. The "sand scrub," Floyd's Island. Saw palmetto, sparkleberry, poor grub, prickly pear, partridge bean, small pines, huckleberries (*Vaccinium Myrsinites*). June 13, 1921.

"SAND SCRUB"

DISCUSSION

On the islands there was only one area we constantly heard called "sand scrub." This small habitat occurs on Floyd's Island. This island seems to have a more ridge-like appearance than some of the other islands. In several respects it has affinities with the outside eastern mainland. Some of the islands in the southern part of the swamp reveal the same condition. One other area we have provisionally placed in this category, namely the sandy area north of Fence Pond (less than one mile east of the letter R in Trail Ridge Moniac Quadrangle, a little area of 150 feet contour). These areas (*sand scrub*) are the most desert-like tracts of the southeast. Sometimes, the spaces between the shrubby clumps are clean of herbage or with few individuals and species. The Fence Pond area with its beautiful moss covered oaks has reminded us of some Texan and southwestern localities. In the earlier days several explorers such as De Soto and earlier scientists such as John and William Bartram, have remarked the "deserts," "desert plains," "vast deserts" and "sand deserts."

Two journal notes follow:

June 11, 1921, Floyd Island sand scrub. Plenty of saw palmetto. The predominant bushes are clumps of oaks 3-6 feet high (*Quercus myrtifolia*, *Q. Chapmani*, *Q. geminata*) and poor grub (*Lyonia ferruginea*) to 8-10 feet high and sparkleberry (*Vaccinium arboreum*). There is also an oak. In all there are three or four kinds of live oak in the sand scrub. These oak and "Poor grub" patches are with *Vaccinium Myrsinites* at their bases. The intervals are clear sand or with clumps of saw palmetto between the oaks. In the sandy areas remaining might be "he huckleberry" (*Gaylussacia dumosa*) prickly pear (*Opuntia Pes-corvi*) and partridge bean. A few small pines are also revealed. Captured a "race mare" (*Cnemidophorus sexlineatus*).

July 9, 1922. Fence Pond Sand Scrub. Wonderful clump of moss laden live oaks (*Quercus geminata*). This clump is clear of vegetation beneath it. On its western border we took *Quercus cinerea*. There is on this border a clump of *Quercus catesbaei*, under which we took "race nags" (*Cnemidophorus sexlineatus*) and a black snake (*Coluber constrictor*). Took a swift in the leaves beneath the live oaks. In another clump of oaks and "gooseberries" (*Vaccinium caesium*), took another race nag, and chamaeleon (*Anolis carolinensis*). There are no end of Gopher turtle holes and some wonderful clumps of saw palmetto."

In one or two places we heard a cut off pine land designated as "palmetto scrub." One sometimes wonders if these sand scrub areas have not arisen from the cutting or destruction of the pines of dry pine barrens or sandy ridges. With the loss of the oaks, palmetto might become dominant, or if no oaks were present, palmetto come directly into prominence. Possibly there is some kinship in the two "sand scrub" and "palmetto scrub." Old terms "hammocks of palmetto" or "palmetto ground" of John Bartram's day are probably not synonymous with palmetto scrub. They doubtless meant cab-

bage palmetto. What we have termed sand scrub is related to sand hills and ridges and might be considered as a part of that category.

LIST OF PLANTS

TREES:

<i>Pinus palustris</i> Mill.	"Long leaf Pine"
<i>Quercus catesbaei</i> Michx. 1	"Turkey Oak"
6 <i>Quercus Chapmani</i> Sarg. 1	"Post Oak"
<i>Quercus cinerea</i> Michx. 1	"Turkey Oak," Upland Willow Oak
4 <i>Quercus myrtifolia</i> Willd. 2	"Scrub Oak"
1 <i>Quercus virginiana</i> Mill.	"Live Oak"
1 <i>Quercus virginiana</i> Mill.	
<i>geminata</i> (Small) Sarg. 1	"Live Oak"

SHRUBS:

<i>Pteridium latiusculum</i> (Desv.) Max.	"Highland Fern"
<i>Serenoa serrulata</i> (Michx.) Hook.	"Saw Palmetto"
<i>Castanea pumila</i> (L.) Mill. 1	"Chinquapin"
<i>Rubus</i> sp. 1	"Blackberry"
1 <i>Lyonia ferruginea</i> (Walt.) Nutt. 1	"Poor Grub," "Hardhead"
<i>Gaylussacia dumosa</i> (Andr.) T. & G. 1	"Hogberry," "Wooly Cods"
2 <i>Gaylussacia tomentosa</i> (Pursh.) Chapm.	"Hoary Huckleberry," "Blue Huckleberry"
1 <i>Vaccinium caesium</i> Greene	"Gooseberry," Buckberry
1 <i>Vaccinium arboreum</i> Marsh	"Farkleberry," Sparkleberry
1 <i>Vaccinium Myrsinites</i> Lam.	"Huckleberry," Evergreen Blueberry

HERBS:

2 <i>Galactia Elliottii</i> Nutt.	Elliott's Milk Pea
1 <i>Tephrosia chrysophylla</i> Pursh.	Prostrate Goat's Rue
1 <i>Aureolaria pedicularia</i> (L.) Raf.	Lousewort, False Foxglove
1 <i>Dasystoma pectinata</i> (Nutt.) Benth.	Pectinate False Foxglove
1 <i>Opuntia Pes corvi</i> LeConte	"Prickly Pear," Crowfoot Cactus

GRASSES, SEDGES, RUSHES, ETC.:

3 <i>Rynchospora dodecandra</i> Baldw.
--

SAND HILLS AND RIDGES

Ecologic Synonymy (1737-1860)

1775. "tracts of sandy white pine ground"; (Am. Husbandry, 1775, 2: 48).
 1784. "It is all universally and immense sand-bank covered with pines, which however generally grow very tall and lofty." (Smyth, 1784, 2: 94); "sandy barrens" (p. 100).
 1791. "dry sandy heights" (Wm. Bartram, 1791: 91); "sand hills" (pp. 30, 58, 173, 181); "sand ridges" (p. 179).
 1799. "poor sandy hills" (Hawkins, 1799: 24); "pine hills" (p. 48); "high pine barren hills" (p. 61).

1802. "barren grounds"; "inferior highland of sandy nature"; "dry lands" (Drayton, 1802).
1816. "sand hills" "The most sterile description of Pine barrens, . . . where the sand is coarse and deep"; "sandy shrubby plains" (Baldwin, 1816: 339, 332, 333, 334).
1821. "Sandy ridges," "Sandy pine barrens" (Elliott, 1821, 1: 489, 494; 1824, 2: 615); "dry sandy soil" (2: 535); "dry sandy pine barrens" (1: 458).
1823. "The oak and hickory lands produce almost exclusively those two kinds of forest trees, with occasionally gigantic pines: the underbrush is generally composed of sucker saplings of the oak and hickory; this description of land is generally disposed on the exterior edges of the high hammocks, and separate them from the pine lands. The black oak is the species most general here; . . . (Vignoles 1823: 89).
1827. "barren hills," "borders of hammocks (*Quercus pumilla*)" (Williams, 1827: 39).
- 1822-1842. "the land gradually rises into pine ridges, the loose sandy soil of which my little mare has reason to remember, . . ." (G. A. McCall, 1868: 36).
1836. " . . . we found the only live *gopher*, or land tortoise . . . although their holes, on the high, dry sand hills, were seen in hundreds." (Cohen, 1836: 212).
1860. "poor sandy soils"; "light soils"; "poor soils" (Darby, 1860).

DISCUSSION

Our list of species for the sand hills and ridges has 14 species of trees, 19 shrubs and 64 herbs while the dry pine barrens has 8 tree, 19 shrub, and 52 herb species. Of grasses, sedges, etc., the first has 4 species; the latter, 13 species. In trees they exceed the dry pine barrens. Like the dry pine barrens, the sand hills remind us of the southwest in their numerous species of composites, legumes, and spurge.

The areas we have considered sand hills and ridges are roughly the few white spots on the Folkston and Moniac quadrangles (United States Geological Survey) from Folkston to St. George, Georgia. We collected particularly at the bluffs at Trader's Hill, sandy spots around Folkston and similar areas from Spanish Creek to Cowhouse Creek on the Folkston-Moniac road.

One journal note will suffice:

July 15, 1922. On a high sandy ridge south of Spanish Creek saw plenty of *Quercus Catesbaei*, and *Quercus cinerea* with some *Pinus palustris*. Woods rather barren of herbage. *Gaylussacia dumosa* beneath the oaks. In a grassy place is an abundance of poison ivy (*Rhus toxicodendron*). There are some persimmons, *Baptistia* sp., *Croton* sp., and brake. In another place plenty of *Quercus cinerea*, *Quercus catesbaei*, and *Quercus digitata*, . . . an oak ridge.

TREES:

- Pinus palustris* Mill.
 1 *Carya illinoensis* (Wang.) K. Koch
 3 *Carya glabra* (Mill.) Spach.
 1 *Carya alba* (L.) K. Koch
Quercus catesbaei Michx. 3
Quercus chapmani Sarg. 1
 1 *Quercus cinerea* Michx. 3
 1 *Quercus digitata* (Marsh) Sudw.
Quercus marilandica Muench 1
 1 *Quercus myrtifolia* Willd.
 2 *Quercus virginiana* Mill. 2
Quercus rubra (*Q. falcata* Michx.)
 2 *Quercus nigra* L.
 2 *Quercus stellata* Wang.
Diospyros virginiana L. 2

"Long leaf Pine"
 "Hickory" "Pecan"
 "Hickory" Pignut
 "Hickory" Mockernut

"Post Oak," Chapman's Oak
 "Turkey Oak," Blue Jack
 "Spanish Oak"
 Black Jack
 "Scrub Oak"
 "Live Oak"
 Red Oak
 "Water Oak"
 "Persimmon"

SHRUBS:

- Serenoa serrulata* (Michx.) Hook.
 3 *Myrica pumila* (Michx.) Small
 1 *Castanea pumila* (L.) Mill.
 2 *Quercus pumila* Walt.
 2 *Quercus phellos* L.
 1 *Asimina pygmaea* (Bart.) Gray
 2 *Asimina speciosa* Nash.
 1 *Asimina angustifolia* Gray
 1 *Prunus angustifolia* Marsh
 1 *Crataegus integra* Beadle
Chysobalanus oblongifolius Michx.
 4 *Croton argyranthemus* Michx. 1
 1 *Ilex opaca* Ait. 1
 3 *Ceanothus microphyllus* Michx.
 2 *Bejaria racemosa* Vent.
 1 *Gaylussacia dumosa* (Andr.) T. & G.
 4 *Vaccinium caesium* Greene
 1 *Bumelia tenax* (L.) Willd.
 2 *Viburnum scabrellum* (T. & G.) Chapm.

"Saw palmetto"
 "Highland Myrtle"
 "Chinquapin"
 "Oak runner," "Lowland oak runner"
 Willow Oak
 "Pop Haw," "Possum Haw"
 "Stinking Bush," "Pop Haw"
 "Billy Mizzell Apple," "Possum Haw"
 "Pop Haw," "Possum Haw"
 "Billy Mizzell Apple"
 "Wild Plum"
 "Haw"
 "Ground Oak," Gopher Plum
 Croton
 American Holly, "Holly"
 Small-leaved New Jersey Tea
 "Honeysuckle"
 "Hogberry," Dwarf Huckleberry
 "Gooseberry," Squaw Huckleberry
 Tough Buckthorn, Black Haw
 Soft-hairy Arrow-wood

VINES:

- Rhus toxicodendron* L. 1

"Cow itch," Poison Oak

GRASSES, SEDGES, RUSHES, ETC.:

- Stenophyllus capillaris* (L.) Britt.
 3 *Panicum commutatum* Schultes
 1 *Panicum* sp.
 1 *Kyllinga pumila* Michx.

HERBS:

- | | |
|---|-------------------------------|
| <i>Pteridium latiusculum</i> (Desv.) Max. 2 | "Highland Fern" |
| <i>Cuthbertia graminea</i> Small | Roseate Spiderwort |
| <i>Yucca filamentosa</i> L. | "Bear Grass" |
| <i>Manfreda virginica</i> (L.) Salisb.— | False Aloe |
| 1 <i>Boehmeria cylindrica</i> (L.) Sw. | False Nettle |
| 3 <i>Eriogonum tomentosum</i> Michx. | Downy Eriogonum |
| 1 <i>Rhynchosia simplicifolia</i> (Walt.) Wood | Round-leaf Rhynchosia |
| 3 <i>Galactia Elliottii</i> Nutt. | Elliott's Milk Pea |
| 4 <i>Psoralea canescens</i> Michx. | |
| 2 <i>Lupinus villosus</i> Willd. | Hairy Lupine |
| 1 <i>Tephrosia ambigua</i> (M. A. Curtis) Chapm. | Cat's gut |
| 1 <i>Tephrosia chrysophylla</i> Pursh. | Prostrate Goat's Rue |
| 5 <i>Baptisia lanceolata</i> Walt. 1 | "Gopher Grass," "Buck eye" |
| 1 <i>Desmanthus</i> sp. | Mimosa |
| 3 <i>Polygala grandiflora</i> Walt. | Largeflowered Milkwort |
| 1 <i>Polygala incarnata</i> L. | Nude stemmed Milkwort |
| 1 <i>Crotonopsis linearis</i> Michx. | Crotonopsis |
| 1 <i>Tragia linearifolia</i> Ell. | Linear-leaf Tragia |
| 1 <i>Jatropha stimulosa</i> Michx. | Spurge Nettle |
| 1 <i>Euphorbia Ipecuanhae</i> L. | Flowering Spurge |
| 1 <i>Stillingia sylvatica</i> L. | "Queen's Delight" |
| <i>Hibiscus aculeatus</i> Walt. | Rough Rose Mallory |
| <i>Sida rhombifolia</i> L. | Spiny Sida, Prickly Sida |
| 1 <i>Ascyrum hypericoides</i> L. | Glossy "St. John's-wort" |
| 1 <i>Piriqueta caroliniana</i> (Walt.) Urban. | |
| <i>Opuntia vulgaris</i> Mill. | Common Prickly Pear |
| <i>Eryngium synchaetum</i> (Gray) Rose | Eryngo |
| 1 <i>Asclepias cinerea</i> Walt. | Linear-leaf Milkweed |
| 1 <i>Asclepias humistrata</i> Walt. | Rabbit's Milkweed |
| 1 <i>Asclepias tuberosa</i> L. | Butterfly Weed, Pleurisy Root |
| 1 <i>Breweeria trichosanthes</i> (Michx.) | Breweria |
| 2 <i>Tencrium c. littorale</i> (Bicknell) Fernald | Wood Sage, American |
| | Germander |
| 3 <i>Monarda punctata</i> L. 1 | Dotted Horse Mint |
| 1 <i>Hyptis radiata</i> Willd. | Swamp basil |
| 1 <i>Phlox</i> sp. | Phlox |
| 1 <i>Verbena carolinensis</i> (Walt.) Gmel. | Carolina Vervain |
| 1 <i>Dyschoriste oblongifolia</i> (Michx.) Ktze. | Calophanes |
| 2 <i>Galium pilosum</i> Ait. | Hairy Ladies' Bedstraw |
| 2 <i>Galium hispidulum</i> Michx. | Scarlet-fruited Bedstraw |
| 4 <i>Vernonia angustifolia</i> Michx. | Narrow-leaf Vernonia |
| 1 <i>Eupatorium aromaticum</i> L. | Smaller White Snake-root |
| 1 <i>Erigeron pusillus</i> Nutt. | Horse weed, Butter-weed |
| <i>Chrysopsis graminifolia</i> (Michx.) Nutt. | "Goat grass," Silver-leaf, |
| | Golden Aster |
| 1 <i>Gnaphalium obtusifolium</i> L. | Sweet Balsam |
| 1 <i>Silphium compositum</i> Michx. | Rosin-weed |
| 2 <i>Berlandiera pumila</i> (Michx.) Nutt. | Downy Berlandiera |
| <i>Helenium tenuifolium</i> Nutt. | Bitterweed |
| <i>Gaillardia lanceolata</i> Michx. | Lance-leaf Gaillardia |
| <i>Pyrrophappus carolinianus</i> (Walt.) D. C. | Leaf-stemmed, False Dandelion |

MARGINAL BOGS (Strands)

Ecologic Synonymy 1737-1860

1791. "Bogs" (Wm. Bartram, 1791: 25); "boggy ponds or morasses" (p. 197).
1799. "It is sometimes called E-cun-fin-o-cau, from E-cun-nau, earth; and Fin-o-cau, quivering. This is a very extensive swamp and much of it a bog; and so much so, that a little motion will make the mud and water quiver to a great distance. Hence the name is given." (Hawkins, 1799: 21, 22; Hodgson, 1848).
1799. "The whole of these swamps is bogs." (Hawkins, 1799: 21).
1802. "boggy grounds" (Drayton, 1802).
1803. "Bogs" (J. Davis, 1803, edit. 1909: 96).
1821. "Bogs" (Elliott, 1821, 1: 346).
1827. "fresh marsh"; "in boggy clumps" (Williams, 1827: 61, 62).
- 1822-1842. "Bogs" (McCall, 1868: 31, 382); "quick-sand bogs," "moss-covered bog" (p. 39).
1848. "damp bogs" (Sprague, 1848: 354).

DISCUSSION

Outside the cypress bays which encircle the islands there is a sphagnous "strand" (bog) which sometimes extends far into the "prairies." Sometimes as on the east side of the north end of Billy's Island or around parts of Black Jack Island the marginal bog or "strand" extend from the very edge of the island with no cypress bay intervening between it and the island. More often the islands are surrounded by cypress bays and the marginal bogs reach far beyond the bays. Around the cypress or "prairie" heads there is also a strand or sphagnum circle. In our "prairie" discussion the "maiden cane" (*Panicum hemitomum*) or "duck grass" (*Rynchospora corniculata*) zone interspersed with "swamp fern" (*Woodwardia virginica*) is vegetation in this strand. They are the same zonally and correspond to Kearney's *Woodwardia-Sphagnum* (Fern and Peat Moss) association of his Dismal Swamp discussion (Kearney 1901: 428; see also Harshberger, 1911). Kearney mentions *Woodwardia virginica*, *Eriophorum virginicum*, *Decodon verticillatus*, *Calopogon pulchellus*, and *Sphagnum* as of this association. All these and more enter strongly into the Okefinokee marginal bogs.

There are several well known marginal bogs, some of which are locally designated "strands," e.g., Billy's Island Strand. Between Chesser Island Landing and Lake Sego (Seagrove) there is an ill defined "strand." Around Honey Island, Black Jack Island, and Floyd's Island are some excellent "strands."

The marginal sphagnum mat extending from islands or the swamp's edge under the cypress and out as a wide carpet into the prairies is comparable to



FIG. 69. Pitcher plants (*Sarracenia*). North fork of Suwannee Canal. June 1, 1921.

FIG. 70. Fresh nest of the round tailed "muskrat" (*Neofiber alleni nigrescens*).

Water-lilies, maiden-cane, *Dulichium*, sphagnum, and water-plantain about it.

Floyd's Island Prairie Strand. June 12, 1921.

MARGINAL BOGS OR "STRANDS"

our northern peat bogs with the central lake slowly being filled up with the encroaching sphagnum and heaths from the land's edges.

Some of our hasty journal notes might more vividly explain some features of these marginal bogs or "strands."

May 9, 1921. In the strand east of Billy's Island. Found *Sarracenia minor* common, a few *Magnolia virginiana* now past, a *Utricularia* (*U. subulata*) growing in sand and another kind (*U. fibrosa*) in wetter places. Saw a few *Pogonia divaricata*. Blueberries and huckleberries just beginning to ripen. Found an *Epilobium*-like flower on lumber R. R. There are *Smilax laurifolia*, *Smilax Walteri*, *Vaccinium Elliottii*, *Vaccinium formosum*, *Syngonanthus flavidulus*, *Galactia Elliottii*, *Andromeda phillyreifolia*, and *Vaccinium Myrsinites*.

June 10-14, 1921. Floyd Island Strand. Considerable time spent on the strand studying the round-tailed Muskrat (*Neofiber alleni*). *Dulichium* common, "Hardheads" (*Xyris*) common, sometimes almost a pure stand. In places beautiful clumps of "fire grass" (*Drosera longifolia*). Less of "pink water moss" (*Utricularia purpurea*). Plenty of "never wet" (*Orontium*), *Peltandra* ("wampee"), "fireweed" (*Pontederia cordata*). Considerable of *Cephalanthus*. Saw in one place *Calopogon* and *Spiranthes*. Several *Nymphoides aquaticum*. Tall saw grass in places. A special grass near rat's nests. Some nests on or beside "cattail" (*Erianthus saccharoides*) tussocks. *Sphagnum* around the bases of these tussocks with some *Utricularia* (yellow). Some places low with "bonnets," *Sphagnum*, *Dulichium*, *Drosera* occasional, "fireweed," "wampee." Some yellow composites (*Bidens coronata*) now blooming and some Marsh St. John's Wort (*H. virginicum*). One place where clump of "cat tail" grass grows is a sphagnum mat with *Syngonanthus*, *Rhynchospora*, *Xyris*, little *Dulichium*, *Spiranthes*, *Hypericum virginicum*, *Sagittaria*, "bonnets," and some *Decodon*. Some *Sarracenia minor*, a foot or one foot and a half high.

July 28, 1921. Black Jack Island. Later while yet wet and after our exhausting walk across the strand, I went back to collect on the trail, just the boggy part. It is sphagnum with plenty of *Hydrocotyle umbellata* in bloom, *Drosera longifolia*, plenty of *Dulichium arundinaceum*, *Sagittaria graminea*, a grass, a sedge, *Pogonia ophioglossoides*, one in bloom, others past, *Calopogon pulchellus*, one in bloom, most of others past; near the edge of an alligator's hole *Habenaria repens* common in special patches. Plenty of yellow "fire grass" (*Utricularia fibrosa*) in bloom. Across this strand we had to stop frequently to rest. Sometimes it would seem to hardened veterans like us that we could not pull another leg out for a step forward. We might sink to knee or waist.

From the above jerky descriptions it is apparent sphagnum plays a much more important rôle in the Okefinokee than in the Dismal Swamp in 1898. It is the characteristic plant of the marginal bogs or local "strands." Beneath the cypress of the bays no other plant is more dominant, in the "prairies" it is more common than some might suppose. In the cypress ponds it also may be at times very common, and in fern bogs it is abundant. No water habitat is wholly without it and most have more of it than of any other plant. The

Okefinokee Swamp, except for its islands, open "prairies," and watercourses, is just one immense sphagnum bog or morass.

The following forms we have collected or recorded on the marginal and fern bogs.

TREES:

Any of the trees of the cypress bay (or its derivative "cypress head") may be present. Actually our notes record small *Magnolia virginiana* most frequently.

SHRUBS:

Any of the shrubs of the cypress bay (or its derivative "cypress head") may be present. Also *Cephalanthus* and *Decodon*.

- | | |
|---|---------------------------------------|
| 1 <i>Smilax Walteri</i> Pursh. | "Red Bamboo" |
| 1 <i>Smilax laurifolia</i> L. | "Black Bamboo" |
| 4 <i>Itea virginica</i> L. | "Indian Reed," Virginian Willow |
| 2 <i>Pyrus arbutifolia</i> (L.) L. f. 1 | "Chokeberry" Chokeberry |
| 1 <i>Ilex vomitoria</i> Ait. | |
| 1 <i>Ilex glabra</i> (L.) Gray | "Gallberry," Inkberry |
| 3 <i>Gordonia Lasianthus</i> (L.) Ellis | "Red Bay," "Loblolly Bay" |
| 6 <i>Leucothoe racemosa</i> (L.) Gray 1 | "Hurrah bush," Swamp Leucothoe |
| <i>Leucothoe elongata</i> Small? | |
| 3 <i>Andromeda phillyreifolia</i> Hook. | Low Andromeda |
| 4 <i>Lyonia ligustrina</i> (L.) D. C. | |
| <i>foliosiflora</i> (Michx.) Fern. | |
| <i>Lyonia nitida</i> (Bartr.) Fernald 1 | "Hurrahbush" (evergreen) |
| 1 <i>Gaylussacia nana</i> (A. Gray) Small | "Blue Huckleberry," Dwarf Huckleberry |
| 10 <i>Gaylussacia tomentosa</i> (Pursh.) Chapm. | "Blue Huckleberry," Hoary Huckleberry |
| 10 <i>Vaccinium corymbosum</i> L. 1 | Common Blueberry, Swamp Blueberry |
| <i>Vaccinium Elliottii</i> Chapm. | Hammock Berries, Elliott's Blueberry |
| 10 <i>Vaccinium Myrsinites</i> Lam. | "Black Low Bush Huckleberry" |
| 1 <i>Viburnum nudum</i> L. | |

GRASSES, SEDGES:

See list of prairies (*Erianthus saccharoides*, *Panicum hemitomum*, *Dulichium arundinaceum*, *Fuirena scirpoidea*, *Rynchospora alba*, *R. corniculata*, and *R. fascicularis*, and *Eriophorum virginicum* most abundant.)

HERBS:

- | | |
|---|------------------------------|
| <i>Sphagnum</i> sp. | |
| 1 <i>Lycopodium alopecuroides</i> L. | "Rabbit's tail," "Buckthorn" |
| 2 <i>Woodwardia virginica</i> (L.) Sm. | "Ordinary Club Moss" |
| <i>Sagittaria graminea</i> Michx. 2 | "Fern" "Swamp Fern" |
| <i>Sagittaria lancifolia</i> L. 2 | "Water plantain" |
| <i>Orontium aquaticum</i> L. 2 | "Water plantain" |
| 3 <i>Syngonanthus flacidulus</i> (Michx.) Ruhl. | "Never wet," "Flag" |
| 1 <i>Xyris brevifolia</i> Michx. | "Highland Buttongrass" |
| | "Highland Hardhead" |



FIG. 71. Sphagnous bog south of Honey Island. Sphagnum, trumpets, wampee, and swamp fern. July 3, 1921.

FIG. 72. Open fern bog, northwest side of Floyd's Island. Bog of *Woodwardia*, *Scleria* and sphagnum. June 13, 1921.

MARGINAL BOGS OR "STRANDS" AND FERN BOGS

1 <i>Xyris fimbriata</i> Ell.	"Hardhead"
<i>Xyris Smalliana</i> Nash 2	"Hardhead"
1 <i>Lachnanthes tinctoria</i> (Walt.) Ell.	Red Root
<i>Iris caroliniana</i> Watson 2	"Flag"
2 <i>Burmannia biflora</i> L.	Two flowered Burmannia
2 <i>Habenaria cristata</i> (Michx.) R. Br.	Crested Yellow Orchis
2 <i>Habenaria repens</i> Nutt. 1	Creeping Orchis
1 <i>Calopogon pulchellus</i> (Sw.) R. Br. 3	Grass pink
<i>Spiranthes praecox</i> 1 (Walt.) Wat. & Coult.	
<i>Pogonia divaricata</i> (L.) R. Br. 1	Spreading Pogonia
<i>Pogonia ophioglossoides</i> (L.) Ker. 1	Snake mouth
3 <i>Sarracenia minor</i> Walt. 2	"Trumpets," "Flycatcher"
<i>Sarracenia psittacina</i> Michx.	"Trumpets," "Flycatcher"
2 <i>Drosera longifolia</i> L. 4	"Fire grass"
4 <i>Drosera capillaris</i> Poir.	"Fire grass"
1 <i>Galactia Elliottii</i> Nutt.	Elliott's Milk Pea
4 <i>Crotalaria sagittalis</i> L.	"Partridge Bean"
<i>Hypericum virginicum</i> L. 1	"St. John's"
<i>Hypericum opacum</i> T. & G. 1	"St. John's"
<i>Hydrocotyle umbellata</i> L. 3	Water Pennywort
<i>Utricularia fibrosa</i> Walt. 2	"Water Moss"
1 <i>Utricularia subulata</i> L. 1	"Water Moss"

THE FERN BOGS—DISCUSSION

The marginal bogs or "strands" (locally) of the Okefinokee Swamp or the *Woodwardia-Sphagnum* Association of Kearney (1901) and Harshberger (1911) may frequently in the Okefinokee have special areas locally called "fern bogs." Occasionally on the "strands" proper there will appear regions with little else than "fern," *Woodwardia virginica* and "moss," *Sphagnum* sp. These *Woodwardia* regions are often in restricted open areas within the cypress bays. Here with the ingress of some sunlight and the loss of some overhanging cypress by cutting or other causes, the *Sphagnum* and *Woodwardia* (normally beneath the cypress) capture the whole area. About a half mile west from the lumber camp (1921 and 1922) on Billy's Island along the long trestle on the lumber railroad is a fine fern bog. This is in the same region as the fern bogs near Gallberry Island (recorded in 1912 by the original party and in 1913 studied by Professors J. G. Needham and J. C. Bradley). One of the finest fern bogs we have seen is on the northwestern edge of Floyd's Island. It is at the very edge of the island as other fern bogs often are. It was an immense sea of *Woodwardia* fronds and little else. All over the ground was sphagnum and a slight depth of water. With *Pinus caribaea* (Elliottii), *Persea pubescens*, *Itea virginica*, *Ilex glabra*, *Leucothoe racemosa*, *Vaccinium Elliottii*, and other "cypress bay trees," shrubs, (little or no cypress) as a wall on its outer side one might not connect it with the marginal bog beyond the bay. It is, however, a specialized "strand," or bog, and even in the "lay" mind of the residents a special form of it may be called "fern

prairie." For example, we asked Mr. R. A. Chesser what the moat-like water area encircling Mitchell Island (see Moniac U. S. Geological quadrangle) might be. He replied "That is not a lake or open water. It is a fern prairie." One other extension of the type may come in some cypress ponds on the islands or on the mainland. Sometimes the open center of a cypress pond may be shallow with nothing but *Woodwardia virginica* and *sphagnum*. Or the encircling wall of trees and shrubs be left and nothing but a thick strand of *Woodwardia* and *sphagnum* remain to show where the pond once was, or we may get *Woodwardia* and *sphagnum* pockets on the land in other ways. A typical fern bog in Okefinokee Swamp seems to have the *Woodwardia* fronds higher and closer together than some of the best *Woodwardia sphagnum* open bogs we get in Oswego and Wayne counties, N. Y.

If we therefore consider the fern bogs as marginal bogs or "strands," we have the following stages:

- a. *Woodwardia-Sphagnum* pockets with or without shrubs on islands or mainland. Least depth of water.
- b. *Woodwardia-Sphagnum* in shallow open centers of cypress ponds.
- c. *Woodwardia-Sphagnum* as island border bogs or "fern bogs" with cypress bay separating them from the prairie border.
- d. These border bogs may form one continuous moat-like area around an island. "Fern prairie" with cypress bay outside it and strand beyond, e.g. Mitchell Island.
- e. *Woodwardia-Sphagnum* bogs in open places in cypress bay. Near Gallberry Island.
- f. Marginal bog or "strand" proper with diverse plants. Greater depth of water. The greatest depth, however, has the shallow marshes or "prairies."
- g. Small circles of *Woodwardia-Sphagnum*, etc., around cypress heads or islands in open "prairies."

SUGAR HOUSE—DISCUSSION

St. Mary's has a very interesting tabby (*tappy*, *tapia*) mission house locally called "The Sugar House." This mission may be San Felipe de Athuluteca (1680), or Santa Maria de Sena, or San Mattea, or San Pedro y San Pablo de Puturiba. We spent only an hour or so about it, but secured the following interesting plants on it or near it. When we came close to the building (over 100 feet in length) from the east, our guide, Mr. Isaac F. Arnow of St. Mary's, Ga., asked us to locate it. None of the four of us could find it for some time. It is well hidden by surrounding trees and shrubs, the principal species being old field pine, cedar, sweet gum, oaks, laurel (*Osmanthus*), *Ilex vomitoria*, *Cornus microcarpa*, *Rubus*, etc. The interior has quite large trees with tangles of vines such as grape, trumpet vine and virginia creeper. Just west of the building in the more swampy parts were pretty nodding *Pogonias*

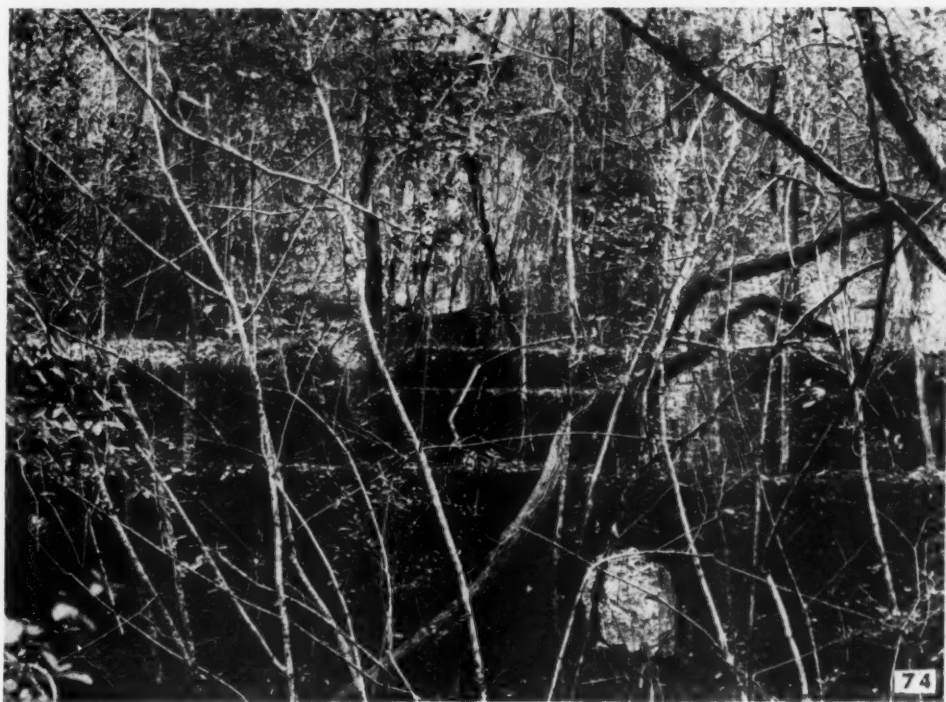


FIG. 73. Sugar House, south side, near St. Mary's, Ga. Aug. 13, 1922.

FIG. 74. Within the Sugar House. Eastern chamber, to show the tangle of vegetation that has grown up in this old Spanish mission house. Aug. 13, 1922.

SUGAR HOUSE

(*P. trianthophora*). Here were also indications of former trenches or canals or of former cultivation by the occupants of the mission house.

On the walls of the house or within the building or in the windows we took:

<i>Asplenium parvulum</i> Mart. & Gal.	Small Spleenwort
<i>Oplismenus setarius</i> (Lam.) R. & S.	
<i>Panicum Joorii</i> Vasey	
<i>Stellaria</i> sp.	Chickweed
<i>Rubus</i> sp. (low trailer)	Blackberry
<i>Galium hispidulum</i> Michx.	Scarlet-fruited Bedstraw
<i>Ipomoea Quamoclit</i> L.	Cypress Vine, Indian Pink

CAMP CORNELIA—DISCUSSION

At Camp Cornelia we collected an assemblage of species hard to classify ecologically. At Camp Cornelia the Suwanee Canal Company had headquarters in the early '90s. From it a canal runs into the swamp many miles. In some ways the area is dry pine barrens, but other elements enter. Some bay and water course forms from the swamp appear along the canal; one or two saw mill species enter; signs of cultivation are almost gone, but might be suspected from some plant elements.

The forms we collected follow. Several more were observed but not recorded in the following list.

TREES:

<i>Pinus caribaea</i> Morelet	"Slash Pine"
<i>Carya aquatica</i> (Michx. f.) Nutt.	
<i>Quercus cinerea</i> Michx. 5	"Turkey Oak"
<i>Quercus virginiana</i> Mill.	"Live Oak"
<i>Quercus myrtifolia</i> Willd.	"Scrub Oak"
<i>Quercus Catesbaci</i> Michx. 3	Turkey Oak
<i>Quercus lyrata</i> Walt.	Swamp Oak, Overcup Oak
	Lyre-leaved Oak
<i>Morus rubra</i> L.	"Mulberry," Red Mulberry
<i>Morus alba</i> L.	"Mulberry," White Mulberry
<i>Melia Azedarach</i> L.	"China Berry"

SHRUBS:

<i>Quercus pumila</i> Walt.	"Oak runner"
<i>Asimina speciosa</i> Nash	"Stinking Bush"
	"Possum Haw," etc.
<i>Prunus angustifolia</i> Marsh	"Wild Plum"
<i>Baccharis halimifolia</i> L. 3	Groundsel tree, Pencil Tree
<i>Rhododendron viscosum</i> (L.) Torr.	"Honeysuckle," Swamp azalea
<i>Rubus</i> sp.	"Blackberry"
<i>Ilex vomitoria</i> Ait.	

VINES:

<i>Vitis rotundifolia</i> Michx.	"Bullace Grape"
----------------------------------	-----------------

GRASSES, ETC.

Panicum lancearium Trin.
Panicum hemitomum Schultes
Cyperus echinatus (Ell.) Wood.
Stenophyllus capillaris (L.) Britt.

HERBS:

<i>Lycopodium cernuum</i> L.	Nodding Club Moss
<i>Amaranthus viridis</i> L.	Pigweed
<i>Strophostyles helvola</i> (L.) Britt. (edge of canal)	Wild Bean
<i>Rhynchosia simplicifolia</i> (Walt.) Wood	Round-leaf Rhynchosia
<i>Desmodium canescens</i> (L.) DC. 2	Hoary Tick Trefoil
<i>Petalostemon carneus</i> Michx.:	Prairie Clover
<i>Schrankia angustata</i> T. & G. 3	Sensitive brier
<i>Hypericum gentianoides</i> (L.) B. S. P.	Orange Grass, Pinewood
<i>Ludwigia suffruticosa</i> Walt. 2	Ludwigia
<i>Polypremum procumbens</i> L.	Procumbent Polypremum
<i>Asclepias humistrata</i> (Walt.)	Rabbit's Milkweed
<i>Utricularia fibrosa</i> Walt.	Fibrous Bladderwort
<i>Eupatorium rotundifolium</i> L.	Wild Hoarhound
<i>Erigeron ramosus</i> (Walt.) B. S. P.	Daisy Fleabane
<i>Silphium compositum</i> Michx.	Rosin weed
<i>Berlandiera pumila</i> (Michx.) Nutt. 2	Downy <i>Berlandiera</i>

SUMMARY

1. This swamp just above the northern boundary of Florida is tributary to both the Atlantic (St. Mary's River) and the Gulf (Suwannee River).
2. Tidal influences, salt marshes, sand dunes, etc., are absent.
3. Juniper (*Juniperus*) and white cedar (*Chamaecyparis*) are scarce or absent. Cedar Hammock and Cedar Thick, local places not visited by us may have one or both.
4. The major natural plant ecological communities or associations of the swamp proper may roughly be divided into six groups:
 - a. Shallow marshes, locally called "prairies" (including center of cypress ponds, also open lakes).
 - b. Wooded swamps locally called "bays" (including edge of cypress ponds, "heads in prairie," borders of wooded watercourses such as Minne Lake).
 - c. Watercourses (these merge with "prairies" or open-centered cypress ponds).
 - d. Hammocks (including cultivated fields, buildings, most "old fields").
 - e. Barrens (including pine barrens, moist and dry, "sand scrub," sand hills or ridges, etc.).
 - f. Marginal bogs locally called "strands" (including sphagnum bogs, fern bogs, fern "prairie," sphagnum circle around "heads" and around cypress bases, etc.).

5. Many residents being of Carolinian origin use early vegetative terms of that region.
6. The swamp is largely in the Lower Austral Zone with little Upper Austral influences.
7. Our lists are weak in grasses, sedges, annuals, early spring forms and late fall species. Our study is a by-product of a zoölogic survey.
8. From St. Mary's River at Camp Pinckney or Trader's Hill, Ga. to Suwannee River at Fargo, Ga., one can find many of the successions such as Harper (1906, p. 109), Wells (1928, p. 241) or Watson (1926, p. 435) suggest, and more as well. Some successions may be:
 - a. Typical cypress pond. Pond, cypress bordered with or without aquatics. Pond, slash pine or black gum bordered. *Illex myrtifolia* or *Litsea geniculata* pond. *Hypericum* pond. *Woodwardia* pond. *Eriocaulon* pond, etc.
 - b. Fern pond. Fern centered cypress pond. Fern border bog. Fern circle around large islands. Fern circle outside cypress bay next to prairie, etc.
 - c. Cypress pond. Branch swamp. Creek swamp. River swamp. River.
 - d. Moist pine barrens. Hammock. Cypress bay.
 - e. Sand scrub. Sand hill or ridge. Dry pine barrens. Moist pine barrens. Cypress pond. Branch swamp. Wooded swamp or cypress bay. Shallow marsh or prairie.
 - f. Sand scrub. Hammock. Cane swamp. Cypress bay. Marginal bog. Prairie.
 - g. Sand hill. Sand hill bog. Creek swamp. River.
9. Habitat Analyses or Studies Desirable.
 - a. Intensive studies of Savannas: "prairie savannas" or "wet prairies"; "creek savannas"; "savannah pinelands" (moist pine barrens); "savannas or grassy ponds"; "hammock savannas"; "highland savannas," etc.
 - b. Old fields: "rice swamp old fields," hammock old fields; high pine land old fields, etc.
 - c. Habitats analyzed or defined by one or two genera such as *Quercus* species or those of *Polygala*, *Rhexia*, *Ludwigia*, *Illex*, *Smilax*, *Hypericum* (*Ascyrum*) or *Vaccinium*.
 - d. Habitats approached from one group such as grasses or sedges, or composites, or conifers, or heaths, or vines, etc.
 - e. Habitats approached from known former agricultural practices. 1. Rice swamps. 2. Grazed savannas. 3. Tilled Indian mounds. 4. Former cotton, Indian corn, sugar cane, and tobacco cropping. 5. Former indigo pine barrens. 6. Old Orchardng. 7. Hunter or range firing. 8. Denuding pine or cypress forestry. 9. Attempted drainage, etc.

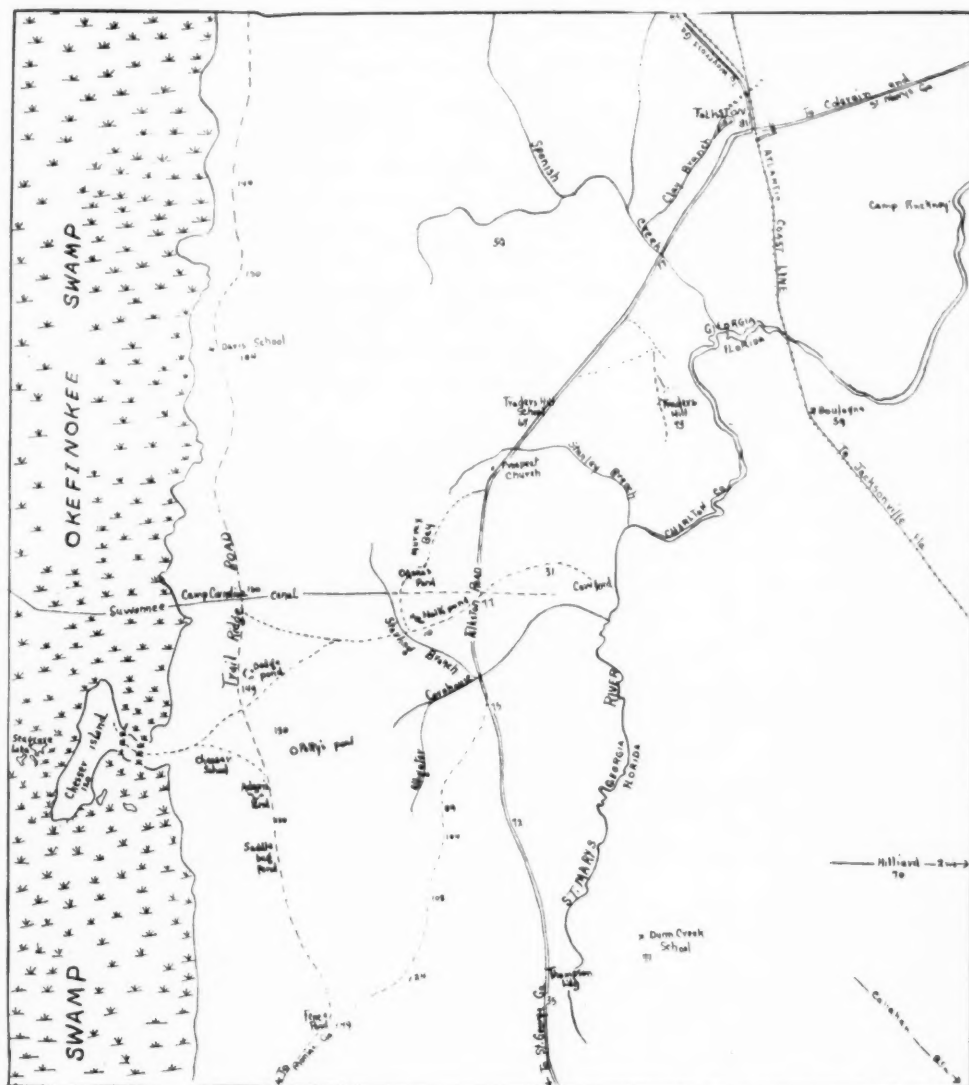


FIG. 75. Map of the Eastern Margin of the Swamp and its Vicinity.

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